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ABSTRACT

Realizing the importance of colleague communication to the physician's medical knowledge, this study attempted to determine what variables affect the success of local colleague networks in raising the individual physician's information level. In an interview of 400 general practitioners and internists in 15 counties in three states, the questions tested the physician's level of information and awareness of current developments in medicine. Complex relationships were observed between physicians and local networks, with different community structures requiring different ways of attaching to the local network in order to maximize the learning payoff. The appendix describes in detail the interviewing and sampling instruments and techniques, and the information test used. (BH)

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New York University
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and
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Physicians' Local Advisory Systems

Final Report

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Principal Investigator

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Project Director

Errata

Table V-7, second figure in upper left corner:
should read 39% (not 3%)

Table V-12, fourth figure in the first line of figures:
should read -.005 (not -.055)

Table V-12, first figure in the second line of figures:
should read .109 (not .091)

Acknowledgments

We owe a considerable debt of gratitude to a number of people without whose help this study could not have been undertaken. We mention only the most important ones among them.

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The experts from whose television lectures for physicians, as explained in Chapter II, items for the information test were drawn, were Drs. Nicholas Christy, Quentin Deming, Calderon Howe, Yale Kneeland, George Melcher, Elliott Middleton, George Perera, and Charles Ragan. They, as well as residents designated by them, gave generously of their time and attention in guiding us in the construction of test questions.

While the counsel of all the above physicians was conscientiously followed in the construction of test questions and the scoring of responses, they are not responsible for remaining flaws in the testing procedure, and have had no responsibility for the remainder of the study design or analysis.

Officers of the state medical societies in the three states where interviews were done generously took time out to examine our study plans and our credentials, and then made our further work possible by communicating their judgment to the local physicians whom we planned to approach. They must remain nameless in order not to identify the study locales.

Four hundred thirteen medical practitioners graciously agreed to a lengthy interview, and carried it through, in most instances, with a cooperativeness and a degree of interest that encouraged our work.

Interviews were carried out by the National Opinion Research Center of the University of Chicago. Our thanks are due to its diligent field staff and its experts in the New York Office, but most particularly to Mr. Robert Banacki who brought expertise, patience, perseverance, and good humor to the trying times of schedule preparation, field work organization, interviewer briefing, and field work supervision.

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CHAPTER - I

INTRODUCTION

The importance of the practicing physician's face-to-face communication with local colleagues to his medical knowledge and beliefs has long been acknowledged in the lore of the medical profession and has more recently been demonstrated in a number of empirical studies, some of which attributed to this process even greater importance than had been anticipated.

Does awareness of this fact have any implications for the improvement of health communication? Do the local communication networks offer any opportunities for the planning of more effective current-awareness services to the medical profession? The answer can be in the affirmative only if it is possible to secure more specific information on two broad topics: (1) Under what conditions are local colleague networks effective in raising the information level of the rank-and-file physician? (2) what, if any, are the possible contact points where services designed to improve health communications for medical practitioners can "plug into" the existing local networks of colleague communication?

The present study was designed to make a contribution to the first of these topics by investigating the structural characteristics of the local communication networks linking medical practitioners, in order to see which of these characteristics are conducive to an effective local communication system and to a high level of awareness of recent medical developments.

The study reported here, sponsored by the Bureau of Health Manpower, is one part of a two-part analysis of data gathered for the purpose of studying the keeping-up behavior and the levels of knowledge and awareness of current medical developments on the part of private practitioners (in general practice and internal medicine), with a focus on the role of colleague relationships in the keeping-up process. The other part of the analysis, and the design and field work of the study, were sponsored by the National Institute of General Medical Sciences, under Grant 09475. The emphasis in the present analysis is on the milieu of colleagues in each medical community.

It was suspected that the patterns of knowledge and communication in the present context follow paths not unlike those already uncovered in communication studies among other specialized groups, as well as in some previous research among physicians. These considerations lead us to give a prominent place in our research plan to the doctor's working milieu (community and hospital) and to his formal contacts with colleagues both in and out of town.

The decision to emphasize milieu and informal contacts with the community of colleagues dictated the concentration of the study on a relatively small number of communities, and interviews with a high proportion of practitioners in the selected specialties in each covered community. This took the place of the more usual design of interviews thinly dispersed over many locales.

Specifically, the study was carried out through interviews conducted in the Spring of 1965 with some 400 general practitioners and internists in private practice in 15 counties in three states. The locales were selected so as to represent a range of medical learning environments. Nearness to a medical school and presence of a teaching hospital initially defined the "medical learning environment" constituted by each community.[1] Additional information about each local professional community and about each hospital resulted from the study itself.

In addition to thus characterizing each interviewed physician's working milieu (hospital and local professional community), the study determined his integration in that milieu and its component parts from his formal position (hospital affiliation, nature of appointment, shared offices) as well as by sociometric techniques (nominations by colleagues as frequent discussion partners or advisors).

The interviewed physicians'level of information and awareness of current developments in medicine was ascertained by a series of interview questions amounting to an information test of selected items in the use of steroids, the management of hypertension, and the treatment of bacterial infections.

In the construction of this test and its scoring procedure, which are described in detail in Chapter II and Appendix A of this report the New York Academy of Medicine lent the researchers its advice and counsel, through a specially formed sub-committe of the Academy's Committee on Medical Education. Although a conscientious effort was made to head the counsel of this subcommittee concerning the information test, they are in no way responsible for possible flaws and certainly not for any other aspects of this study.

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[1] i.e., Further details of the sample design, see Appendix C. The interview questions are reproduced in Appendix B, except for information test questions, which will be found in Appendix A.

The report isorganized in the following manner.

Chapter II describes the information test used, its development, its scoring procedure, and the validations performed.

Chapter III is devoted to the attributes of physicians which are correlated with their individual information scores. This topic is not dealt with in depth in this report, but is covered only sufficiently to provide the necessary statistical controls in the later analysis of social-structural and relational factors. Chapter III develops an "age-specialization typology" for this purpose.

Chapter IV is the first to call attention to differences between the information levels of the several counties studied. The relationships of these differences to the presence of medical learning facilities, are found to differ from the expectations which formed the basis of the sampling plan.

Chapter V presents the data available for describing the advisorship system in each county, and develops a number of indexes for characterizing the advisorship structure. The county-by-county relationship between these characteristics of the advisorship structure and average knowledge levels is shown, as a preliminary to the later attempts at causal analysis.

Chapter VI is devoted to the different ways of measuring the degree to which a physician is "integrated" [illegible] communication network of his local colleagues. It tests if knowledge levels are related to these degrees of integration on the individual level, and also to the county-wide prevalence of the several integration indicators.

Chapter VII shows that these relationships between a physician's knowledge score and his integration in his local medical network, as measured by the several indicators of integration, differ from county to county. The chapter seeks to account for this variation by means of the structural characteristics of the advisorship system in each county.

It had been intended that this analysis, reported in Chapter VII, would make it possible to say what kind of an advisorship structure is most effective in maintaining high information levels. The anticipated within-county correlations between knowledge levels

[illegible]

and indicators of a physician's integration in his local medical community were to serve as measures of the effectiveness of the local advisorship structure. For reasons which are discussed in the report, in particular Chapters VI and VII, the purpose and the evidential status of this analysis had to undergo a shift; rather than speaking of characteristics which make advisorship structures more or less effective, we speak of characteristics which make one way or another of "plugging into" the local network more productive; and these relationships, while suggested by the patterning of the data, remain yet to be corroborated.

Chapter II

MEASURING DOCTORS" KNOWLEDGE OF NEW MEDICAL DEVELOPMENTS

This study called for a technique for assessing, by means of a face-to-face interview, a physician's awareness of and familiarity with certain items of medical knowledge--in other words, an information test that could be administered during a personal interview. The items to be contained in this test should be matters of relevance to the regular practice of general practitioners as well as internists, matters which it is important for such physicians to know and be aware of, and matters recent enough in origin so that there would be reason to believe that the diffusion of their knowledge among practicing physicians had not yet run its course.

Considerable emphasis was placed on devising question formulations and scoring procedures that would not merely test the physician's recognition of correct answers from a list, or their recall of specific facts upon question, but that would also make it possible to ascertain the saliency of the physician's information, and to take account of various qualifications or specifications that physicians might wish to introduce into their answers. At the same time, the length of the test had to be limited to what could be handled in an office interview of reasonable length, administered by medically untrained interviewers.[*] This alone means that the test cannot cover all medical subject matters that would be relevant, nor even a fair sampling of a large number of different medical areas, but had to be limited to a few items of knowledge in each of a small number of areas of medicine. The areas chosen were the use and abuse of adrenocortical steroid hormones, hypertension, and the treatment of relatively resistant bacterial infections. How, then were the areas chosen, the items selected, interview questions for each item formulated, and scoring procedures devised?

Selection of Areas

The information test for the present study was devised in close consultation with a specially created sub-committee of the Committee on Medical Education of the New York Academy of Medicine. This committee was asked to select a few areas of medicine which, in its judgment, contained items of recent medical knowledge which satisfied the criteria set forth in the opening paragraph of this chapter and which in their totality would satisfy two further criteria as well. The areas should cover a wide enough spectrum of medical interests so that the test in its totality was not likely to discriminate against any general practitioner or internist who might exclude one or another specific area from his practice. The areas should also differ from each other in the sources and consultants to whom practitioners were likely to turn for information.

The areas were to be chosen from those that had been dealt with in the Academy's television broadcasts during 1963/64, since these broadcasts were to serve as a reservoir of information items for inclusion in the test, and since the help of the experts who had delivered the broadcasts was to be solicited in the procedure.

As a matter of fact, the present study was able to build on the experience of another study completed for the New York Academy of Medicine.[1] Designed to help evaluate the Academy's weekly television broadcasts for practitioners, this earlier study had used information items distilled from the content of several of the weekly broadcasts.

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[1] See Herbert Menzel, Raymond Maurice and Aims C. McGuinness, M.D.,: "Effectiveness of the Academy's Televised Clinical Science Seminars," Bulletin of the New York Academy of Medicine, 1966, 42, pp. 679-714.

The new Physicians' Information study, of course, is not concerned with the TV program as such, but uses the broadcasts as a reservoir of items of information which, at least in the judgment of the medical educators who delivered these lectures, should be known to office practitioners, yet often are not known (or at least not held in view).

The committee decided to retain two of the four areas for which test questions had been developed in the course of the Medical Television Study--steroids and hypertension[1]--and to add a third area, the treatment of relatively resistant bacterial infections.

Generating and Formulating Items and Interview Questions.

Items were selected and converted into questions through a protracted collaboration between medical educators, residents designated by them, social researchers, and several dozen practitioners with whom trial interviews were held over a period of several months.

In preparation of the Medical Television Study, the social researchers had watched the broadcasts in the television studio and then asked the lecturers for a list of ten or so items of information that they were trying to put across--things that they felt should be known by office practitioners, yet were probably not sufficiently known. Subsequently the designated residents, who had watched the broadcast and also had an audio-tape available, supplied a similar list--usually containing a larger number of more specific items. The social researchers also added to this tentative list of information items. There followed a long session in which the residents answered the social researchers' queries as to the medical issues involved, likely wrong answers, and so on. The researchers then composed a first drafting of interview questions, submitted more queries to the residents, and conducted successive trial interviews with practitioners, interspersed with yet more questions to the residents. (Over 40 trial interviews were held in this phase.) On the basis of this dialogue, the original draft list of information items from the lecture was pruned down to five or six. In most instances, these items had also been rephrased so as to express the information that was at issue as clearly and concretely as possible. The resulting lists of items were then submitted to the medical educators for their comments, together with the corresponding interview questions that had been formulated.

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[1] The other two areas covered in the Television Study were cardiac arrhythmias and management problems in tuberculosis.

For reasons connected with the design of the Television Study, the lecturers were, at the same time, asked to suggest two additional items which had not been covered on the broadcast, yet were, in their opinion, of equal relevance to general practitioners and internists as the items already chosen. The resulting interview schedules were subsequently administered to some 300 physicians. Scoring procedures were devised, and the scores validated by comparisons of physicians with and without certain presumed external earmarks of qaality (board diplomates vs. others, specialists vs. general practitioners, affiliates of teaching hospitals vs. others, U.S. vs. foreign graduates.)

When it came to generating new items for inclusion in the test prepared for the present study, in particular in connection with the new area of bacterial infections, a very similar procedure was followed. Once again the experts who had delivered the corresponding lecture were asked for a list of items that they had tried to convey, and this list was revised in continuous discussion between these experts, a resident on their staff, and the social researchers, who had access to an audio-tape of the broadcast. The lecturers in this area as well as those in the hypertension area made some additional suggestions. (All the lecturers were again approached for their views on the suitability of the test items for their new purpose.) The emerging new test was again tried out in some 30 new pilot interviews with office practitioners, and questions and problems that arose were discussed with the lecturers. The final form of the questions and the raw scoring procedure (to be explained below) were submitted to the respective lecturers and then, in their totality, to the Academy's ad-hoc Committee.

Screening of Items

How did the items, once generated and expressed in interview questions, fare in the judgment of the consulted experts, in the empirical validation to which they were subjected, and in the field interview experience? How many were excluded by each of these considerations from the Area Score for steroids, hypertension, and bacterial infections that were finally constructed?

Steroids--For the area of the steroids, the Television Study had generated eight items for inclusion in the test. Two of them did not survive the experience of the Television Study. One of them (Item 25b) because the critical questions had not been consistently asked of all interviewed physicians, due to faulty instructions to interviewers; the other (Item 24) because it did not correlate well with the validating criteria which will shortly be described. Of the remaining six items, five were used in the present study, the sixth being dropped in order not to extend the interview unduly.

Hypertension--Seven items had been generated in the Television Study for the area of hypertension. Again, one item (Item 34) had not been consistently asked, and another (Item 33) failed of proper validation. For the present study, the lecturers of the original broadcast on hypertension felt that the five remaining items concentrated too exclusively on statistical facts about the incidence and prognosis in hypertension, at the expense of clinical questions concerning therapy and diagnosis. It was therefore decided in concurrence with the Academy's consulting committee, to drop three of these five items and to replace them with three new ones. One of these new items eventually failed of validation in the present study, thus leaving a total of four items for inclusion in the Hypertension Score.

Bacterial Infections--This area had not been included in the Television Study, so that all the items had to be generated anew. Since none of these new items would have had the benefit of screening in the experience of an earlier study, it was decided to draw up a relatively long list of items--nine were actually included in the interview--as a hedge against items that might fail of validation or feasibility. As it turned out, only one of these items had to be dropped from inclusion in the information scores because of its low intercorrelation with the other items, but two others were dropped from numerous interviews when the interviewing time proved to be too long, and one of these two also had to be omitted during the 35% of interviews which were conducted by long-distance telephone rather than face-to-face. This leaves six items for inclusion in the Infections Score.

A numerical summary of these fates of the test items is contained in Table 1. It shows that of a total of 27 items that had been generated and developed to the point of inclusion in the interview of either the

Medical Televison or the present study, four had to be sacrificed for administrative reasons before ever reaching the stage of possible empirical validation. Of the 23 items thus available for validation. Of the 23 items thus available for validation, three were dropped because of unsatisfactory correlations with the validating criteria and a fourth because of poor correlation with the other test items in the area. The nineteen items that had thus been validated somewhere along the line, included four --validated through the data of the Medical Television Study--that were left out of the interviews of the present study in the interest of brevity, or to make room for other items thought essential for a better balance of subject matter. Thus a total of 15 items constitute the components of the three Area Scores and the Grand Score utilized in the present study.

Content of the Information Items

These 15 items, as well as four others that were covered in the interviews conducted for the present study, but omitted from the Area and Grand Scores later constructed for the reasons stated above, are listed in Table 2. Because of the necessarily selective nature of this list of items, the medical reader is invited to examine this list of items in order to form a judgment of the matters covered in the information scores, since these scores form a key element in the analysis which is to follow in later chapters of this report. At the same time, it is important to realize that what is listed in Table 2 is not the questions put to the interviewed physicians, but rather the items of information familiarity with which the interview questions were designed to tap.

The Information Questions

The questions put to the interviewed physicians usually differed considerably from the text of the information items themselves.[1] Most of the questions did not contain the answers in their text, in order to test for recall as well as recognition. Moreover, many of the information items are represented by whole batteries of sequential questions, which made it possible to ascertain the saliency as well as the accuracy of the physician's information, and also made it possible to take account of various qualifications or specifications that the physician himself might wish to introduce.

As an illustration where the procedure was rather simple, we may consider Item 5 from the steroid area. The information item reads as follows:

> Item 5: Steroid-induced thinning of the skin, and ulcerated areas do not respond to ascorbic acid.

The interview question designed to tap the physician's familiarity with this fact reads as follows:

> Question 42.A. Sometimes the administration of [illegible]renal cortical steroids leads to thinning of the skin and ulcerated skin areas.
>
> What has been the success of administering Vitamin C for steroid-induced conditions like that--Would you say it brings about marked improvement most of the time, only occasionally, rarely, or never?

Those who responded "never" or "rarely" to Question 42 were given a Raw Item score of five and four respectively; a "Don't Know" response was given a score of three on the theory that it was better to be uninformed than misinformed. A two was given to the "occasionally" response and the lowest score of one was given to those who responded "most of the time." As it turned out, 29% of the physicians had a score of four or five, 42% were scored three, and the remainder were scored one and two.

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[1] Interview questions and scoring procedures are spelled out in detail in Appendix A.

As an illustration of a more complex sort, let us consider Steroid Item 1. This item reads:

> Item 1: A course of steroid treatment in rheumatoid arthritis, once begun, cannot be easily terminated, both because of the likelihood of rebound and because of the developing adrenal insufficiency.

Here it was felt important not only to see whether the physician would give the correct answer when directly confronted with a question about rebound and adrenal insufficiency, but also to see how readily these dangers would come to his mind in considering steroid therapy in a given type of case. The physician was therefore given an opportunity to mention these considerations spontaneously before having his attention directed to them by a succession of more and more focused questions. The battery of questions takes up two whole pages in the interview guide; it is shown in somewhat telescoped form as Table 3. The reader will understand that the asking of some of the parts of this question was contingent upon the physician's replies given to earlier parts. A rather general question is asked first, and the doctor's attention is only gradually drawn to the steroids, then to possible problems at termination of steroid treatment, and finally to the question of sudden termination. This made it possible to see how readily these matters would occur to the physician spontaneously, before they were brought up by the interviewer.

These matters were taken into account in the scoring procedure for this item, which was correspondingly complex. The answers to the entire battery of questions were considered as a unit. The idea was to see whether each of the two possible complications at termination of treatment--rebound and adrenal insufficiency--would be mentioned by the physician. Pretest interviews had shown that many physicians introduced into their replies the qualification that a given problem might arise if steroid treatment were stopped suddenly, but not if it were tapered off gradually. In consultation with the lecturers of the steroid program, it was decided that this reply was inferior to one which would envisage these complications even in the case of gradual cessation of treatment--especially with regard to the rebound effect.

On the basis of all these considerations, each physician's reply to all parts of this Question was therefore first examined for the readiness with which the rebound effect was mentioned (and with what qualifications), thus resulting in the classification shown in Table II - 4, Part A. They were then examined again for the readiness with which adrenal insufficiency was brought up (and with what qualifications), resulting in the classification shown in Table II - 4, Part B. Finally, both classifications were combined into a single score, as shown in Table II - 5.

In a similar manner interview questions and scoring procedures were devised for each of the 20 information items. These questions and scoring procedures are described in full detail in Appendix A. The resulting "raw item scores" were then examined for satisfactory statistical distribution shown in the last pages of Appendix A.

Standardizing the Item Scores

It is now necessary to proceed to the summation, or quantification, of the several items into a practical form so that meaningful comparisons can be made between items, between groups of physicians, and between the combined scores for each medical area. The item scores as presented so far in their raw form make it impractical to arrive at summary statements that would allow comparisons of the overall level of information held by various groups of the sampled physicians.

The items have, as can be seen in Appendix A, different numbers of categories, and even items containing the same number of categories differ from each other in the difficulty level indicated by the several cutting points between adjoining categories. It would be meaningful to speak of physicians scoring above and below the minimum satisfactory information level on each item, if agreement could be reached on what that level is; but it seemed unlikely that such agreement could be obtained. To average the raw scores obtained by physicians on a number of items, or even on a single item, would introduce an unwarranted assumption of equality of intervals--that is, the assumption that the distance between Scores 0 and 1 on a given item is, in some sense, "the same" as the distance between Scores 5 and 6 on the same item--or even on another item.

Under these circumstances it was necessary to transform each raw item score into a standardized score according to its own, empirically observed, frequency distribution--the distribution displayed in Appendix pp.A-59 to A-61. Each category was assigned a score that corresponded to the difficulty of attaining it, if it is assumed that that difficulty is indicated by the per cent of physicians who failed to reach the given category, and by the per cent of physicians who were able to surpass it. The standardized score assigned to each category was actually equal to the per cent of physicians falling below the given category, plus half of the per cent of physicians falling within the given category. This procedure is shown diagramatically in Table 6, using as an example Steroid Item 1, which was also used as an illustration in the previous section.

The result of this transformation is to assign to each category a score value that is, as nearly as possible, equal to the percentile rank of the average physician in that category. The mean of the standardized scores for any one item, averaged over all physicians, is therefore 50; all items thus have an equal mean. Furthermore, the intervals between the standardized score values of any two categories are proportionate to the differences in the difficulty of attaining them--as measured by the per cent of physicians who attained them. The intervals thus express meaningful arithmetic values, and it becomes appropriate to express the information level attained by any group of physicians as the arithmetic mean of the standardized scores achieved by each physician. It also becomes appropriate to express the information level attained by any one physician on a group of information items as the arithmetic mean of his score on each of the items. The mean of these area scores, when computed for all interviewed physicians, will again be 50.

These standardized scores scores thus lend themselves well to the comparison of the information levels achieved by two or more groups of physicians on any one item or set of items. Similarly, they are appropriate for comparing the differences in information levels achieved by two groups of physicians on one set of items with the differences between the same two groups of physicians on another set of items--for example, whether board membership makes a bigger difference to hypertension information scores or to steroid information scores.

At the same time, the standardization procedure abolishes differences between the difficulties of the several items, and hence the possible differences between the difficulties of the several areas. The average physician is artificially made to achieve the same score (50) on all items and on all sets of items. The standardized scores are thus not appropriate for comparing the difficulty of items, or of sets of items.

Validation of Standardized Item Scores

Before actually pooling the standardized item scores into scores for each of the medical areas, it was considered necessary to subject the item scores to an empirical test of their validity, insofar as this could be done with the data at hand.

It might be assumed that the authority of the experts, the lecturers and residents who helped formulate the initial test items, would serve as a sufficient baseline from which to evaluate the actual response distribution on each of the information items. Nevertheless, it is quite possible that from the point of origin in the televised lecture or in the suggestion of the experts to the actual quantification and tabulation of scores the items would become distorted and prove to be misleading indicators of higher levels of information.

In order to insure that each item score was indeed a measure of "correct" information, an empirical validation procedure was used. Paired comparisons of the average standardized score on each item were made between physicians, paired successively according to certain criteria of medical training, specialization, and access to quality medical institutions--all criteria which should be highly associated with valid information measures. The decision was made to eliminate those items which would not stand up well under this test.

The items which were taken over from the Medical Television Study had already been subjected to suchaa validation procedure applied to the sample of that study. In that case the validating criteria were: recent graduation from medical school (1945 or later); residency of three years or more; specialty practice; certification by a specialty borad; affiliation with a medical-school-connected hospital; membership on a medical school staff. The overwhelming number of paired comparisons supported the validity of these test items--physicians of more recent training, longer training, greater specialization, board certification, affiliation with medical-school-connected hospitals, or personal affiliation with a medical school achieved better scores on almost all items than their counterparts, and usually by a fairly sizeable margin. The few offending items which did not conform to this pattern --including one each from the areas of steroids and hypertension--were omitted from area scores in the Medical Television Study, and were not used in the present study at all.

The surviving items which were included in the interviews of the present study, as well as all the items newly included in the present study, were subjected to new validation, applied to the sample of the present study. In this instance only three validating criteria were used: degree of specialization, year of graduation from medical school, and length of residency. The three parts of Table 7 show the result for steroids, hypertension, and bacterial infections, respectively. For each of the comparisons, the largest value is underlined for ease of inspection. It is easily seen that higher scores were achieved by the more specialized, the board certified, the recently trained, and the longer trained physicians, than by their counterparts. Of the sixty possible comparisons, only nine were opposite to the predicted direction, some of them by very small amounts. Most of the exceptions occur, naturally, in the area of bacterial infections, which had not already been screened in the preceding (Medical Television) Study.

In fact, all of the previously validated items passed the new validating test without difficulty. One of the new hypertension items (Item 2) was dropped from inclusion in Area and Grand Scores because it was negatively related to the degree of specialization, and proved to have only a low correlation with the total area score for hypertension. Infection Item 2 was similarly dropped from inclusion in Area and Grand Scores because of its low correlation with the remainder of the Infection Area Score.

These two items may represent separate dimensions of information on the one hand or because of the possible wording of the questions asked may not have successfully tapped the information originally specified in the information item. In any case it was considered most appropriate to exclude them from the information score.

Items 5 and 10 were not included in the infections area score because it had not been possible to ask the corresponding question of the entire sample.

Area Scores and a Grand Score

Items in each area were combined into an area score by summing the scores for each item and dividing by the number of items. In addition, all three scores were combined into a Grand Score. The distribution of these scores is presented in Table 8. In each case the mean is about 50. The standard deviation for each area score is 16; for the grand score the standard deviation is 13. This grand score provides us with our basic dependent variable.

The correlations between these three area scores are presented in Table 9. On the basis of these correlations one can speak of the grand score as representing three areas of medical knowledge. In later chapters we will also have occasion to examine specific area scores as they relate to informal positions within the medical community. Specifically, we will examine the steroid and hypertension scores of physicians designated as steroid and hypertension advisors. For most purposes of analysis we will refer only to the grand score.

Table II - 1

Information Items Generated and Screened Out in Two Studies [a]

	Total	Steroids	Hypertension		Infections
		all from Med TV	from Med TV	New	all new
Items devised as a result of protracted collaboration (i.e., those which were ever included in either interview)	27	8	7	3 [b]	9
Eliminated because of incomplete interviewing faulty instructions, not used on phone intvs., or cut short on excessively long intvs.)	4	1(#25b)	1(#34)	-	2(#5,#10)
Available for validation	23	7	6	3	7
Invalidated by outside criteria	3	1(#24)	1(#33)	1(#2)	-
Invalidated by lack of intercorrelation	1	-	-	-	1(#2)
Remaining valid items	19	6	5	2	6
Not used on Phys Info because of length of intv., although validated on Med TV	4	1(#26)	3(#32, #35, #36)	-	-
Items used in Phys Info Area Scores	15	5	2	2	6

---

[a] Does not include items on cardiac arrhythmias and tuberculosis, which were used in the Medical Television study only.

[b] Hypertension Item 2 (as well as 3 and 4) is new for it has different content than Item 32, in spite of surface similarity.

Table II - 2

Information Items to be Tapped by Interview Questions: Physicians' Information Study

A.) Cortical Steroids

Item No.	Information	Corresponding Interview Question No.	
		In Present Physicians' Information Study	Old Medical TV Study
1.	A course of steroid treatment in rheumatoid arthritis, once begun, cannot easily be terminated, both because of the likelihood of rebound and because of developing adrenal insufficiency. Gradual tapering off of the treatment reduces the insufficiency problem but not the rebound problem.	36-38	21
2.	A patient being started on long-term steroid therapy should be instructed to report signs of adrenal insufficiency; to report signs of certain other side effects; to maintain his steroid dose as instructed regardless of possible fluctuations in his symptoms; and to inform any other physician who may care for him during stress situations that he has been on steroids. Alternately, the physician may query the patient on these matters during frequent check-ups.	39	22
3.	When a person in long-term steroid treatment undergoes an acute febrile illness or surgical operation his steroid dose should be increased as the insufficient adrenal gland would not give the normal stress response of the increased steroid output needed in times of stress. Replacement by ACTH would not be adequate since the presumably deficient adrenal cortex may not respond to ACTH.	40	23
4.	The known side effects of prolonged steroid treatment include aseptic necrosis of hip and shoulder; decreased growth in children; hypokalemia; and perforation of diverticulum of the colon.	41	25a
5.	Steroid-induced thinning of the skin and ulcerated areas do not respond to ascorbic acid.	42A	27

Table II - 2 continued

	B.) Hypertension	Corresponding Interview Question No.	
		In Present Physicians' Information Study	Old Medical TV Study
Item No.	Information		
1.	Essential hypertension is estimated to be present in 5-10% of the U.S. population; is twice as common in women as in men; remains asymptomatic an average 15 years after first diagnosis.	43-45	31
2.*	There is strong evidence for the importance of essential hypertension as a forerunner of coronary disease and cerebrovascular accident later in life; the evidence is more conclusive with regard to cerebro-vascular accident than with regard to coronary disease.	46	--
3. Version A*	Thiazide drugs have as side effects: raised blood sugar levels; raised uric acid levels; may provoke attacks of gout; may give rise to diabetes.	48	--
Version B	Thiazide side effects include: diabetes; gout; blood dyscrasia; skin rashes; parathesia; potassium depletion or hypochloremia; postural hypotension; and when given in combination with potassium chloride drugs, also ulcers of the small intestine; when not given in combination, thiazide does not lead to ulcers of the small intestine.		
4.	Bruits in connection with renal artery disease are heard more frequently over the abdomen (in the neighborhood of the umbillicus) than over the back.	49	--
5.	The life expectancy in untreated malignant hypertension is about one year; with vigorous hypotensive measures, the five-year survival rate is about one-third.	51	37

* Item 2 was not used in the computation of the Hypertension Score, because of its low correlation with the validating criteria.

Only Version B of Item 3 was used.

Table II -2
(continued)

C.) Bacterial Infections

Item No.	Information	To be Tapped by Interview Question No.
1.	The reason why sensitivity tests are indicated for some organisms and not others is that some are uniformly susceptible (or, more rarely, resistant) to available drugs, while the sensitivity of others is different for different strains, and/or has fluctuated in the course of the years since the introduction of antibiotics.	55 A,B
2.*	Variations in susceptibility to antibiotics warrant a sensitivity test when the organisms E. Coli, Enterococcus, or Klebsiella are identified in pathogenic sites and quantitites; antibiotic susceptibility of the organisms Hemophilus influenzae and Salmonella is constant enough to make sensitivity tests unnecessary.	55 C,D
3.	The new kinds of penicillin released in the last several years include Phenethicillin, Methicillin, Oxacillin, and Ampicillin. (Note: Mention of brand names was given credit as though the corresponding generic name had been mentioned)	56

Table II - 2 continued

C.) Bacterial Infections - continued

Item No.	Information	To be tapped by Q. No.
4.	The several semi-synthetic penicillins have the properties marked by + signs below:	58-59

	a. Effective against Gram-neg. organisms besides Neisseria	b. not acid susceptible (can be used orally)	not susceptible to penicillinase (effective against Penicillin G resistant staph)
Phenethicillin	-	+	-
Methicillin	-	-	+
Oxacillin	-	+	+
Ampicillin	+	+	-

Item No.	Information	To be tapped by Q. No.
5.*	The brand names Syncillin, Staphcillin, Prostaphlin, and Polycillin correspond, respectively, to the generic names given above in the same order. (A score of awareness of brand vs. generic names has also been computed)	58
6.	Acid susceptibility, operative in the stomach, is what determines peroral usability of penicillins	60
7. & 8.	Production of penicillinase is what makes some staph strains resistant to Penicillin G	61A
	Non-susceptivility to penicillinase is what makes some semi-synthetic penicilins effective against staph strains which resist Penicillin G	61B
9.	One important recently released antibiotic is Cephalothin (Keflin)	62
10.*	The semi-synthetic penicillins are not as effective as penicillins G or V against sensitive staphilococcus infections, and should not ordinarily be used unless resistant staph is strongly suspected.	57

*Item 2 was not used in the computation of the Bacterial Infections Score because of its low correlation with the other items. Items 5 and 10 were not used because the corresponding questions had to be skipped during telephone interviews and during certain excessively long face-to-face interviews.
Item 7 & 8 was considered one item for the purpose of Adding Up the Bacterial Infections Score.

Table II - 3

STEROID -- ITEM 1

INFORMATION ITEM

A course of steroid treatment in rheumatoid arthritis, once begun, cannot be easily terminated, both because of the likelihood of rebound and because of the developing adrenal insufficiency. Gradual tapering off of the treatment reduces the insufficiency problem but not the rebound problem.

INTERVIEW QUESTION

Q. 36 a. Now let us think of a specific situation -- A patient with rheumatoid arthritis who has never received steroid treatment. What should be done to help such a patient over an aggravated state of his arthritis?

IF NO MENTION OF STEROIDS SO FAR:

Q. 37. Would steroids be appropriate to help a patient over an acute state of rheumatoid arthritis?

ASK ALL:

Q. 38 a. Suppose a person were put on steroids for the first time in order to help him over an aggravated state of rheumatoid arthritis. Might there be a problem with taking him off the steroids once the arthritis had subsided?

b. Let us say that the treatment is continued for two months or so -- then might there be a problem with taking the patient off steroids?

IF YES:

c. What might happen?

d. Might there be any other problem with taking him off the steroids?

IF GRADUALNESS OF REDUCTION MENTIONED:

e. And if the treatment is tapered off gradually, might there still be a problem? What?

f. What (else) would be the problem if the steroid treatment had to be stopped quickly, let us say in case of sudden infection?

g. Are there any other problems which might occur if the treatment were stopped quickly? What?

Table II - 4

STEROID -- ITEM 1

INITIAL CLASSIFICATION OF RESPONSES

	Code	Rebound effect	Number	Per cent
Col. 11/	1	Mentioned without qualification.	175	42%
	2	Only if the treatment has been long.	18	4
	3	Only if treatment is suddenly terminated.	59	14
	4	If treatment has been long and termination is sudden.	8	2
	5	Rebound effect not mentioned.	96	23
	X	No answer/ not asked.	7	2
	Y	Don't know to entire question.	7	2
	0	No problem in taking a patient off Steroids.	43	11
			413	100%

	Code	Adrenal Insufficiency	Number	Per cent
Col. 12/	1	Mentioned without qualification.	60	15%
	2	Only if treatment has been long.	13	3
	3	Only if treatment is suddenly terminated.	50	12
	4	If treatment has been long and termination is sudden.	10	2
	5	Adrenal Insufficiency not mentioned.	195	47
	7	Shock, withdrawal psychological effects.	28	7
	X	No answer/ not asked.	7	2
	Y	Don't know to entire question	7	2
	O	No problem in taking a patient off Steroids.	43	10
			413	100%

Table II-5

STEROID -- ITEM 1

RAW ITEM SCORE

The above two classifications relating to rebound effect and adrenal insufficiency were combined into an index in the following way:

Rebound effect would occur:	Adrenal insufficiency would occur:			
	Even if tapered off slowly (12/1, 2)	Response as to sudden termination not recorded (12/7)	Only if drugs stopped suddenly (12/3, 4)	Not mentioned, don't know (12/5, 0, y)
Even if tapered off slowly (11/1, 2)	Score 8	Score 7	Score 6	Score 4
Only if drugs stopped suddenly (11/3, 4)	Score 7	Score 5	Score 5	Score 3
Not mentioned, don't know (11/5, 0, y)	Score 4	Score 3	Score 2	Score 1

Item scores as shown were punched in column 50.

Table II-6

Paradigm of Standardization of Scores (Steroid: Item I)

	Distribution of Raw Score			
Raw Score (a)	Per Cent in Each Category (b)	Cumulative Per Cent up to Each Cut Point (c)	Standardized Score (d)	Computation of Mean (b x d) (e)
		100%		
8	13%		93.5	1215.5
		87%		
7	9%		82.5	742.5
		78%		
6	1%		77.5	77.5
		77%		
5	7%		73.5	514.5
		70%		
4	31%		54.5	1689.5
		39%		
3	6%		36	216
		33%		
2	8%		29	232
		25%		
1	25%		12.5	312.5
		0%		

5000: 100 =
5000: 100 = 50

Table II-7

A. Steroids Validation

	DEGREE OF SPECIALIZATION			YEAR OF GRADUATION FROM MEDICAL SCHOOL			RESIDENCY			
							After 1945		Before 1945	
	Boards	W/o boards	GP's	1950 or Later	1940-1949	1939 or Before	3 or more yrs.res.	Less than 3 yrs.res.	1 or more yrs.res.	No Res.
1.	56.6	52.6	47.6	59.1	51.8	38.4	68.3	55.1	44.6	39.4
2.	55.6	53.2	48.2	57.6	51.1	41.6	54.7	55.5	47.9	41.9
3.	65.0	57.6	46.2	62.1	49.7	39.4	74.3	55.0	47.8	38.5
4.	64.2	57.7	46.1	53.7	52.2	45.5	71.2	49.7	53.3	41.5
5.	59.9	53.8	47.1	56.0	52.5	41.6	62.4	54.9	45.8	41.5
Steroids Area Score	59.9	54.5	46.6	57.3	51.0	40.9	66.0	53.6	47.4	40.1

Table II-7

B. Hypertension Validation

	DEGREE OF SPECIALIZATION			YEAR OF GRADUATION FROM MEDICAL SCHOOL			RESIDENCY			
							After 1945		Before 1945	
	Boards	W/o boards	GP's	1950 or Later	1940-1940	1939 or Before	3 or more yrs.res.	Less than 3 yrs.res.	1 or more yrs.res.	No res.
1.	56.9	52.6	47.9	53.6	48.0	47.2	59.8	51.7	47.2	46.2
2.*	46.2	52.3	50.4	51.1	48.9	50.3	46.1	50.3	52.8	49.7
3.*	64.1	51.5	48.2	57.0	50.1	44.1	69.0	51.9	49.6	42.9
3.b	66.7	55.9	45.8	57.0	52.4	41.1	69.2	51.7	52.0	38.8
4.	54.6	51.8	48.8	50.5	49.4	49.8	59.8	49.1	52.7	45.2
5.	66.8	47.6	45.9	54.6	52.4	39.5	63.4	51.3	47.0	41.1
Hypertension Area Score	60.9	51.6	46.7	53.6	50.2	44.1	62.7	50.6	49.4	42.5

*Items omitted from Area Score.

Table II-7

C. Bacterial Infections Validation

	DEGREE OF SPECIALIZATION			YEAR OF GRADUATION FROM MEDICAL SCHOOL			RESIDENCY			
							After 1945		Before 1945	
	Boards	W/o boards	GP's	1950 or Later	1940-1940	1939 or Before	3 or more yrs.res.	Less than 3 yrs.res.	1 or more yrs.res.	No res.
1.	50.6	51.2	49.6	54.4	46.7	47.5	54.7	51.4	49.3	46.8
2.*	50.4	48.9	49.8	53.2	48.6	46.6	50.0	53.1	49.6	44.0
3.	52.4	52.7	49.0	61.3	51.3	36.8	66.3	59.0	43.7	36.9
4.	63.3	46.5	48.9	62.8	50.3	35.5	64.8	59.9	46.8	33.5
5.*	56.8	49.4	48.8	52.5	50.0	47.3	62.4	48.6	48.7	47.8
6.	56.1	51.8	48.1	52.0	57.5	41.0	54.6	52.1	52.8	41.6
7 & 8.	51.5	50.7	50.4	65.0	42.7	40.7	67.7	58.3	41.4	41.4
9.	65.6	54.2	46.8	58.2	51.8	39.5	62.3	54.8	49.2	39.4
10.*	46.4	48.3	50.6	47.4	52.7	49.5	50.2	47.4	49.3	53.2
Area Score	56.2	50.4	48.3	58.5	49.6	39.7	61.4	55.4	46.6	39.5

*Items omitted from Area Score.

Table II-8

Standardized Area Scores for Each Medical Area

(Per cent of physicians)

Standardized Score:	STEROIDS	HYPERTENTION	INFECTIONS	GRAND SCORE
0 - 9	1%	0%	0%	0%
10 - 19	3	1	3	1
20 - 29	9	9	11	6
30 - 39	18	19	16	19
40 - 49	19	24	20	23
50 - 59	19	21	21	31
60 - 69	17	14	18	14
70 - 79	10	8	10	5
80 - 89	3	3	2	1
90 - 99	1	1	0	0
Total	100%	100%	100%	100%
Number of cases	(410)	(410)	(386)	(413)
Mean	50	49	50	49
Standard Deviation	16	16	16	13
% below 50	50%	52%	49%	49%
# of items	5	4	6	15

Table II-9

Correlations Between Three Area Scores and the Total Score

	Steroids Score	Hypertension Score	Infections Score	Grand Score
Steroids Score	----	.353	.520	.805
Hypertension Score		----	.382	.737
Infections Score			----	.809

Chapter III

INDIVIDUAL CORRELATES OF KNOWLEDGE

The chief purpose of this study is to examine the ways in which physicians' familiarity with recent medical information may be affected by the milieu of local colleagues in which they are working, and by their integration in that milieu. For this purpose, a measure of the physician's familiarity with selected items of recent medical information was devised, and reported on in the preceding chapter. Before relating this measure to the milieu factors, however, it is necessary to report more briefly on the relationship of knowledge levels to each physician's own training, experience, and keeping-up activities. This will be done in the present chapter. The direct effects of these individual characteristics on physicians' knowledge levels will, in later chapters, provide a background against which the possible effects of the milieu can be evaluated, and from which the milieu factors must be disentangled through appropriate statistical techniques.

A. Training and Type of Practice

Specialists (particularly diplomates of specialty boards), and the more recently trained physicians, (and those who served longer years of residency) uniformly achieved higher average Grand Scores than their less trained and older counterparts (Table 1).

The uniformity of this relationship is, of course, in part an artifact of the elimination of those information items which could not be validated by these same factors (see preceding chapter). Since, however, only four out of 23 items had to be eliminated for this reason, it remains an empirical finding that most of the items originally selected by medical educators on the basis of their importance in ordinary office practice, are in fact best known to the physicians who received the most recent, longest, and most specialized training.

When recency of training and specialization are considered jointly, each is seen to make an independent contribution to information levels. This is shown graphically in Table 2. The more recently trained physicians are distinctly more aware of recent medical information than those trained long ago, and this is true at each level of specialization--among general practitioners, among internists without boards, and among board diplomates. (It will be recalled that the study was confined to general practitioners and internists.) Conversely, the higher the degree of specialization, the higher the level of information, and this is true for each successive cohort (generation) of graduates. Only among the most recent graduates are internists without boards as knowledgeable as the board diplomates. One is tempted to conclude that having undergone the requirements for board status protects one's knowledge from decaying as fast as it does among other physicians--but there is not sufficient warrant to regard the downward slopes of the curves in Table 1 as signs of knowledge decaying with the passage of time; the same outcome would result if all groups had retained equal portions of their training, provided only that the more recent graduates learned more--especially of recently developed knowledge--during their period of training, than the older physicians did during theirs. But whether the differential is due to decay of knowledge, or simply to unequal initial acquisition of knowledge, it is evident that it is not made up for by the current keeping-up activities of these physicians, and that the purposes of "continuing medical education" are not being accomplished.

Length of training is a third aspect of training, besides its recency and specialization, that may reasonably be expected to affect physicians' information levels. That this is indeed the case is shown in Table 3, which adds the number of years spent in residency by each physician to the factors previously considered. Because length of residency is so intimately related to specialization, as well as to the time of training,[1] it is necessary to consider its effect on knowledge levels within each age and specialization category separately. Residency is seen to make some independent contribution to knowledge levels, although not a very powerful one.

The joint contribution of these three factors--recency of graduation, specialization, and length of residency--to information levels, on the other hand, is a very powerful one. It falls into a pattern which can be represented by sorting the physicians into four age-specialization types (shown by solid lines and Roman numerals on Table 3). These types have been given the labels "Board diplomates and younger specialists," "Young GP's," "Older specialists and middle-aged GP's" and "Older GP's." The average Grand Score and standard deviation for each type is presented in Table 5. This typology accounts for approximately forty percent of the total variance in the scores. The difference between the average scores of the two extreme types is twenty-three--a spread of nearly two standard deviations.

So far the information levels have been indicated by the "Grand Score" which, as will be recalled from the previous chapter, is an average of scores achieved on the three areas of hypertension, steroids, and bacterial infections. Table 5 shows that what is true for the grand score is true for each of the area scores: the education-specialization types are ordered in the same way by each of these scores. The only differences are that the spread is somewhat greater for the steroid scores than for the others and that the infections score, unlike the others, hardly differentiates between "board members and younger specialists" and "young general practitioners."

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[1] The meaning of a given number of years of residency has changed considerably over the past 30-40 years.

This "Age-Specialization Typlogy" will be used in much of the subsequent analysis for the purpose of "holding constant" the joint effect of the three training factors on information levels, while examining how the latter are related to yet other variables. An easily interpretable and descriptively informative method of disentangling the effects of training from other effects, for many purposes, is to report results separately for each of the four age-specialization types. In other instances, however, where causal analysis is more crucial to the central research purposes of the study, a more precise method of "holding constant," which makes fuller use of all the available data, is desired, and in these instances descriptive interpretability is sacrificed to the greater statistical precision of multiple regression analysis and related techniques. Both techniques will be illustrated in the remainder of this chapter.

B. Keeping-up Activities

Extensive data on the interviewed physicians' exposure to communication channels and participation in keeping-up activities and continuing education programs of many kinds were obtained. In fact, a considerable portion of the interview effort was devoted to this end. Surprisingly, most of these activities showed very little relationship to the information levels as measured by our scores, with the exception of attendance at post-graduate courses and the reading of professional journals--particularly, but not exclusively, specialty journals.

It is, of course, true that specialists give considerably more attention to journals, especially to specialty journals, than general practitioners do; and also that the types of postgraduate courses attended differ along specialty lines. Nevertheless, both of these forms of keeping-up show a relationship to information levels, even within categories of the education-specialization typology (Tables 6 and 7). Both, however, have more effect among older general practitioners than in the remaining categories of physicians.

Another way of disentangling the contribution to knowledge levels of specialization training factors from those of current keeping-up activities is presented in Table 8. It shows for physicians of each age-specialization type not only the mean grand score which was already shown in Table 5, but also an "adjusted grand score," indicating the average score that would have been achieved by the physicians of each type if it had not been affected by postgraduate-course attendance or specialty-journal reading.

C. Comparison of Individual Correlates

Yet another way of assessing and comparing the importance to knowledge levels of all the variables considered so far is used in Table 9.

Here the relationship between each of the three training-specialization variables to information levels is first expressed as the square of the correlation ratio (eta^2). This quantity records the portion of the total variance in information scores which is accounted for by each of the three factors. The table also shows the square of a multiple correlation coefficient (using dummy variables), expressing the portion of the total score variance assounted for by the three factors jointly; it is almost 40%, The bottom half of Table 9 shows eta^2 for the age-specialization typology, which combines in itself the three variables first listed; and indeed the relationship of this typology to information levels is seen to be nearly identical to that of the multiple R^2 shown for the three variables jointly.

The table also shows a corresponding measure for the relationship to information scores of postgraduate course attendance, and of specialty journal reading. Finally, it shows under "beta^2", the squares of three partial coefficients; they indicate, approximately, the association between information levels and each of the three listed variables, once the effect of the other two has been discounted.[1]

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[1] Multivariate controls were obtained by using a computer program for Multiple Classification Analysis (MCA). Andrews, Frank, Morgan, James, and Sonquist, John, Multiple Classification Analysis, ISR, 1967.

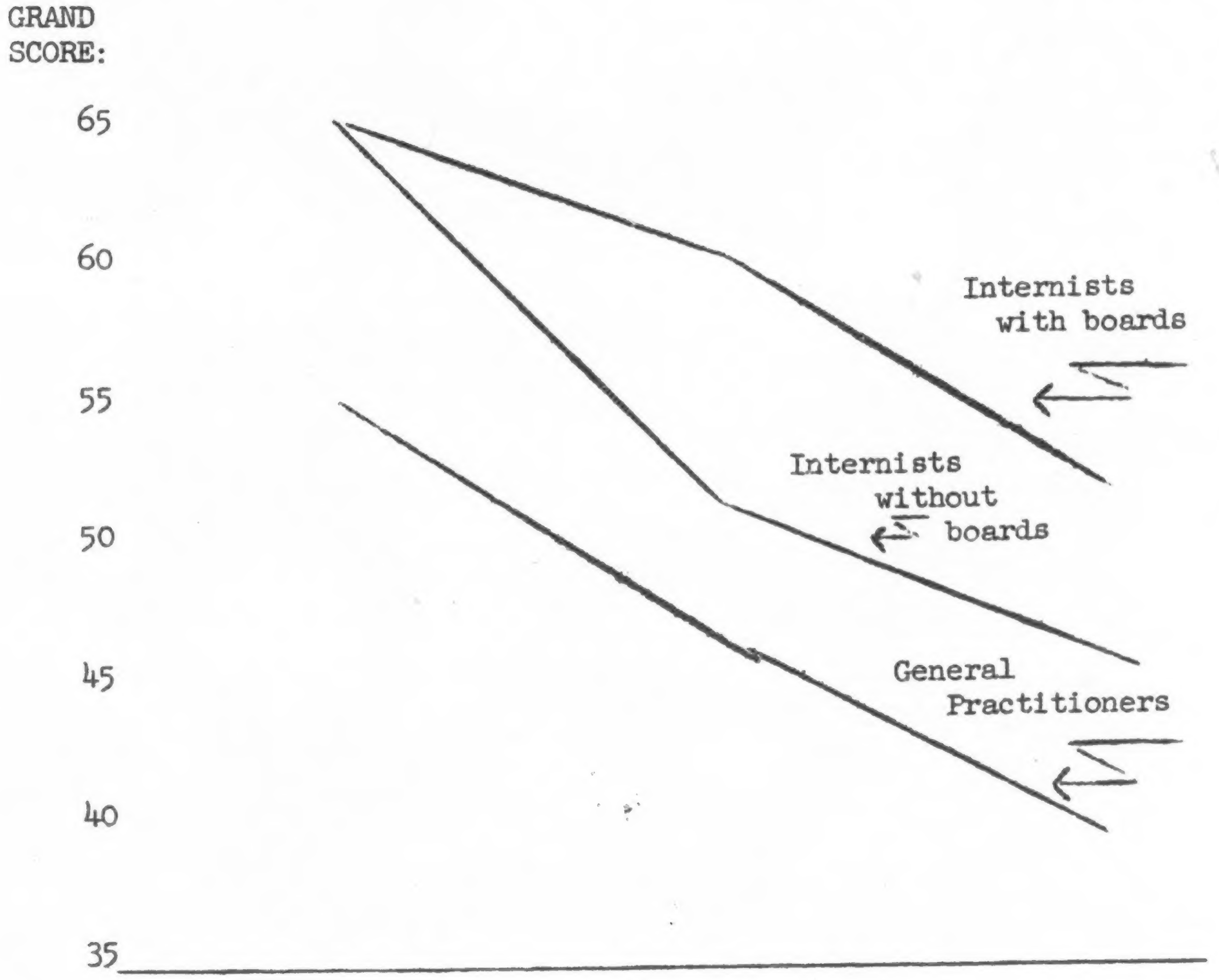
Table III - 1

Specialization and Recency of Graduation and Information Levels

	Mean Grand Score	Number of Cases
Specialization:		
Board diplomates	58.7	44
Specialists without boards	51.7	80
General practitioners	46.9	289
Year of Graduation:		
1950 or later	56.1	154
1940 - 1949	50.1	105
1939 or earlier	41.4	154

Table VIII - 2

Specialization and Recency of Graduation Jointly, and Information Levels



YEAR OF GRADUATION

	1950 or later	1940-1949	1939 or before
Specialization:			
Board Diplomate	64.5 (11)	59.9 (19)	52.5 (14)
Specialists w/o Boards	64.5 (21)	51.8 (21)	44.7 (38)
General Practitioners	54.1 (120)	46.6 (65)	38.6 (101)

Table III - 3

Make-up of Age-Specialization Typology

Average Grand Scores are shown for each category;
Frequencies are shown in parentheses

Year of graduation	Years of residency	Board Diplomates	Specialists without boards	G.P.'s without boards
1950 or since ("young")	3 or more	66 (9)	65 (16)	49 (1)
	1 - 2	56 (2)	72 (1)	52 (20)
	none	- (0)	I 60 (4)	II 54 (99)
1940 to 1949 ("middle-aged")	3 or more	60 (13)	55 (10)	39 (1)
	1 - 2	54 (5)	51 (5)	49 (21)
	none	81 (1)	III 49 (6)	46 (43)
1939 or before ("older")	3 or more	56 (9)	51 (9)	53 (5)
	1 - 2	43 (4)	41 (17)	41 (24)
	none	56 (1)	46 12	IV 37 (73)

Categories were grouped as shown by solid lines and Roman numerals above, and designated as follows:

Roman Numeral	Designation	Frequency
I	"Board Men and Young Specialists"	70
II	"Young GP's"	122
III	"Older Specialists and Middle-aged GP's"	124
IV	"Older GP's"	97
	Total	413

Table III - 4

Description of Age-Specialization Typology

(Roman numerals refer to Table 2)

No.	Designation	In- and ex-clusions not self-evident from designation	Grand Scores	Frequency
I	Board Men and Young Specialists	Excludes 5 older board men who had less than 3 years of residency; includes 10 middle-aged specialists who had 3 years of residency	Range 54-81; Mean 60.6 SD 10.4	70
II	Young GP's		Range 49-54; Mean 54.0 SD 9.6	122
III	Older Specialists and Middle-aged GP's	Includes: 11 middle-aged specialists who had less than 3 years of residency; 5 older board men with less than 3 years of residency; and 5 older GP's with 3 years of residency.	Range 39-56 Mean 46.5 SD 9.8	124
IV	Older GP's	Excludes 5 with 3 years of residency	Range 37-41 Mean 37.8 SD 9.9	97
	TOTAL		Mean 50.0 SD 12.7	413

Table III - 5

Age-Specialization Typology by Grand Score and Three Medical Area Scores

	Board Members a/ and Younger Specialists b/	Young General Practitioners	Older specialists c/ Middle-aged GP's d/	Older e/ General Practitioners
Grand Score				
Average:	60.6	54.0	46.5	37.8
Standard Deviation:	10.4	9.6	9.8	9.9
Number of cases:	(70)	(122)	(124)	(97)
Steroid Score	63.0	54.7	46.8	37.0
Hypertension Score	61.6	51.1	47.1	40.4
Infections Score	57.9	57.3	47.0	36.8

a/ Excludes 5 older board men who had less than 3 years of residency.

b/ Includes 10 middle-aged specialists who had 3 years of residency.

c/ Includes 11 middle-aged specialists who had less than 3 years of residency; 5 older board men with less than 3 years of residency.

d/ Includes 5 older GP's with 3 years of residency.

e/ Excludes 5 GP's with 3 years of residency.

Table III - 6

Journals Read and Grand Score by Age-Specialization Typology

	All Cases	Board Diplomates and Younger Specialists	Young General Practitioners	Older Specialists and Middle-Aged GP's	Older General Practitioners
Number of General Professional Journals Read:					
None to two	45.8	56.2	54.3	44.2	33.8
Three	49.6	63.2	52.8	47.8	37.3
Four or more	52.1	62.6	54.9	47.9	44.1
Number of Specialty Journals Read:					
None	39.4	--	48.7	42.8	32.8
One	47.0	50.0	55.9	45.7	37.6
Two	50.4	61.5	53.7	46.4	39.3
Three or More	53.4	60.9	54.3	48.2	44.6

Table III - 7

Post Graduate Courses and Grand Score by Age-Specialization Typlogy

Number of Post Graduate Courses: Attended in the past 3 years	All Cases	Board Diplomates and Younger Specialists	Young General Practitioners	Older Specialists and middle-aged GP's	Older General Practitioners
None	43.2	56.8	51.0	43.1	35.5
One or two	50.7	61.7	53.9	45.8	40.4
Three or more	55.4	61.9	57.4	50.7	49.4

Table III - 8

Age-Specialization Typology and Grand Score, Adjusted for Postgraduate Courses and Specialty Journals

Age-Specialization Type:	(1) Grand Score	(2) Adjusted Grand Score [a]	(3) Number of Cases
Board members and younger specialists	60.6	58.8	70
Young General practitioners	54.0	53.8	122
Older Specialists and Middle-Aged GP's	46.5	45.9	124
Older General Practitioners	37.8	41.2	97

[a] Controlling for postgraduate courses attended in last 3 years, and for number of specialty journals read regularly.

Table III - 9

Grand Score and Individual Correlates of Knowledge: Correlation Ratioes Squared

	eta^2	beta^2 [a]	R^2
Specialization	.091	.047	.393
Recency of graduation	.258	.275	
Length of Residency	.124	.041	

	eta^2	beta^2
Age-Specialization Typology (Combination of the three above factors)	.388	.279 [b]
Postgraduate course attendance	.152	.052 [c]
Specialty journal reading	.128	.025 [d]

[a] Holding constant, in each case, the other two factors

[b] Holding postgraduate courses and specialty journals constant

[c] Holding age-specialization typology and specialty journals constant

[d] Holding age-specialization typology and postgraduate courses constant

Chapter IV

COUNTIES, KNOWLEDGE LEVELS, AND PERCEIVED LEARNING CLIMATES

A. Counties and Other Geographic Units

The "milieu of local colleagues" in which each physician is working was chosen as one of the chief focusses of this study. Colleague relationships within this milieu are to be determined, the advisorship system among local colleagues is to be mapped out, each physician's degree of integration in that milieu is to be measured--and all these factors are to be related to knowledge levels. But what, effectively, constitutes the "milieu of local colleagues" for a physician? What are the geographic or other boundaries of communities of physicians within which medical communication networks operate and information norms are shared? Is it all practitioners in a given city? in the county? or even in the whole state? Or is it a smaller unit--perhaps those affiliated with the same hospital--or the yet smaller set of physicians practicing in the same building or sharing an office with each other? or is it necessary to draw boundaries of a more subtle nature than geographic lines of demarcation--such as groupings of specialists, or of physicians of common training or common background?

Attempts are sometimes made to choose among these partly concentric partly overlapping, ways of delineating communities of physicians on a priori grounds. But it must be recognized that these are really empirical questions, aimed at delineating what is the effective community of physicians. When, as in the instance of this study, the effect one is interested in is that on the knowledge levels of practitioners the realization becomes, "What manner of delineating 'communities' will maximize the concentration of the communication and norm-sharing processes within them?" This, in turn, becomes translated into research questions of the following kind: does the presence of a teaching hospital have an effect only on the knowledge levels of practitioners affiliated with it, or does its effect extend to others in the same city--or in the same county? Is shop talk among physicians largely confined to those who meet in their common hospital or in the building where their offices are located, or does it cut across such groupings? Do practitioners seek scientific information and leads from colleagues in neighboring counties, or only in their own? Are there recognizable norms about journal reading or postgraduate-course attendance that differentiate physicians in different cities, or is the locus of such norms determined more by common background than by common location? Most generally put, perhaps--is a physician's knowledge level affected by the kinds of colleague contacts that prevail in his hospital--in his city, even outside his hospital--or in his county, even outside his city?

At the present time, our empirical knowledge of these processes is so poor that almost all the possible answers to these questions and others like them are equally likely to be true. Not only are we unable to state the proper delineation of the effective milieu of colleagues for the medical practitioner, but we have only inadequate evidence for the manner of effectiveness of any milieu of colleagues on the practitioner's information levels. In order to make a beginning in answering these questions, it is necessary to choose some one delineation of milieus as a starting point. The present investigation has, for this purpose, chosen to make the county in which each physician practices the primary focus of attention. Most of the analysis will be concerned with the social structures that tie together the practitioners in each county, and the manner in which this structure, and each individual physician's position in it, relates to his knowledge level. This basic analysis will be supplemented and qualified by a consideration of other colleague milieus and ties, such as-shared offices, common hospital affiliations, and contracts with colleagues in neighboring counties. At a later time it should be possible to use the data of this study for a more systematic comparison of the effectiveness of communities of colleagues delineated in these several different ways.

The choice of the county as the first "community of colleagues" to be investigated--and, indeed, as the basis of the sample design of this study--is not completely arbitrary. It is a large enough unit to contain within it most of the other groupings that can be suggested as likely "communities of colleagues," so that data on their effectiveness are obtained simultaneously. Medical societies are almost invariably based on the county as a basic unit of organization, and it is likely that this largely reflects the realities of local colleague relationships. Hospitals, also usually use the county as the basis of any geographic consideration the the according of privileges to physicians.

And because of the well-known and increasing concentration of doctor's offices according to city size, the bulk of the physicians in most counties practice in the largest city in the county, thus making distribution between cities and counties as communities of colleagues largely academic.

Some empirical findings of the present study may be cited at this point in support of the appropriateness of the decision to use counties as "communities of physicians" in the first instance. Most of the 413 physicians interviewed had their offices in the central city of their county or in an immediate suburb of that central city. As later chapters will document in considerable detail, counties serve as an effective boundary for most informal contacts among colleagues, while hospitals and shared offices, although being locuses of concentrated physician interaction, are quite often bridged by these contacts. Furthermore, physicians have their own evaluations of the information levels and learning climates in the counties of their practice, and those show some homogeneity within counties and a number of realistic correspondencies to the situation prevailing in each county, as the later part of the present

Chapter will show. Other findings bearing on the effectiveness of counties as communities of colleagues will be brought out throughout this report.

B. Learning Facilities, Hospital Affiliations, and Knowledge Levels in Counties and County Clusters

Knowledge Level Differences Between Counties

The distribution of information scores over the 15 counties included in the survey is shown in Table 1. Mean information scores for each of the three medical areas are given for each county, as is the mean grand score and an adjusted mean grand score, the latter is the average grand score that would have been achieved by the physicians of each county, had it not been affected by their specialization and training (as indicated by the age-specialization typology introduced in Chapter III). The counties are identified by fictitious names, and are listed in decreasing order of the adjusted grand score. The one county containing a medical school, however, is shown separately at the bottom of Table 1, and is not included in the summary figures given. This is done because the comparatively low sampling ratio which had to be applied in this county because of its very large population of eligible practioners made it unwise to combine this county in most of the sociometric analysis of later chapters with the remaining counties, in which satuaration sampling was aimed for and a very high sampling ration was obtained. (Details about sampling will be found in an appendix to this report.)

Table 1 shows a considerable spread in the mean information scores of the counties--ranging from 38.5 to 54.9, and expressed in a standard deviation (from the unweighted mean of the 14 county scores, not including the Medical School County) of 4.8. When weighted by the number of physicians interviewed in each county, the squared deviations from the weighted grand mean account for just over one-tenth of the total variance ($13^2 = 169$, as reported in Chapter II) in the grand scores of individual physicians (N = 413); the value of the squared correlation ratio is $eta^2 = .111x$ (including the Medical School County).

How much of this differential between the mean scores of the several counties is due to the fact that some counties have many specialists, others only few? The last column of Table 1 shows that specialization, recency of graduation, and length of residency by means of the Age-Specialization Typology reduces the range to run from 43.6 to 54.6 (instead of 38.5 to 54.9), and the standard deviation of county scores to 1.7 (from 4.8). In terms of the proportion of the total individual score variance (N = 413) accounted for, the squared partial correlation ratio, controlling for the Age-Specialization Typlogy, is $beta^2 = .052$, or about half of the uncontrolled value ($eta^2 = .111$). Thus, the differential distribution of specialists and well-trained physicians accounts for about half of the differential between counties, leaving another half to be explained.

Counties and age-specialization types jointly yield a squared multiple correlation (using dummy variables) of $R^2 = .415$, which may be compared with eta^2 = .388 for the age-specialization typology alone, given in Chapter III. It is instructive to note that the adjustment does not affect all the county scores in the same way. On the average, of course, the adjustment procedure brings the scores closer to their mean; but it does not do so uniformly. Some county scores are approximated to the mean quite drastically. If such counties scored originally above the average (like Hern),they owed their high standing to a disproportionately large number of specialists and/or to specialists who exceede the local general practitioner in knowledge levels to an exceptional degree. If such counties scored originally below the average (like Shafts), they must have owed their low standing to a disproportionate paucity of specialists, or to general practitioners who trailed especially far behaind their local specialists in information scores.

In the case of some other counties, the adjustment procedure actually moved their score further away from the mean. Evidently, original high scores of such counties (like Wood and Hunts) were achieved in spite of a disproportionately low number of specialists, and/or the fact that the specialists did not score much higher than the general practioners; while originally low scores of counties in this class (like Ate County) prevailed in spite of their disproportionate endowment with specialists, and/or in spite of generalists whose scores did not trail far behind those of the local specialists.

As a result of these differential adjustments, the rank-order of adjusted scores is somewhat different from that of unadjusted scores, as can be seen more plainly in Table 2.

We shall see later in this chapter how the proportion of specialists in a county is related to the average knowledge levels of the specialists as well as the general practitioners in it.

Table 1 also shows that few counties show dramatic discrepancies between their scores for the three medical subject-matter areas, although some differences do occur. Thus Ate County scores especially high in Hypertension and Pro County in Steroids, while West County scores particularly high in Steroids and low in Bacterial Infections. This also can perhaps be seen more clearly from the rank-orders, recorded in Table 2. Altogether, the counties vary more among each other in the Hypertension Score than in the two other area scores.

Learning Facilities and Geographic Clustering

What else may account for the variation in information levels between counties, beyond the make-up of the counties' physician population (in terms of specialization and length and recency of training)? The presence of accessibility of medical learning facilities--primarily medical schools and teaching hospitals--are the obvious next candidates as explanatory factors. Indeed, as will be recalled, the sampling of counties for this study was explicitly designed to take these factors into account, and to yield a sample of counties of which some would contain hospitals offering internships and residencies, others would at least be near (i.e. within a 50-mile radius) such hospitals, and still others would be far away from any such hospitals. At the same time, one of the counties was chosen so as to contain a medical school, while some of the counties in each other category would be within 50 miles of that medical school, and others a longer distance from any medical school.

The mean grand scores achieved in counties of each of these types is shown in Table 3, together with the grand score adjusted for age-specialization type as before. For reasons which will become apparent shortly, it was found meet to single out as a separate category counties containing a hospital approved for residency although not containing any hospital approved for internships.

The data of Table 3 do not conform to expectations; in fact, little of any systematic nature can be discerned. Inspection shows readily that the variation of county scores within county types easily matches that between county types. There is not even a consistent tendency for counties located near the next higher type of facilities to outscore more remote counties in the same facilities group. Results are equally disappointing whether the unadjusted or adjusted grand score is considered.

Consideration therefore turns to the grosser geographic, economic, and demographic differences between counties, which perhaps outshadow in their consequences any differences due to different medical learning facilities being accessible. Although the sampling frame attempted to yield a set of counties roughly comparable in population density, degree of industrialization, and regional culture, this attempt may not have been successful; one set of three adjoining counties, in particular, was known to be located in an economically less advantaged area than the others.

It is therefore advisable to examine information scores in relation to the geographic grouping of the selected counties, as is done in Table IV. It should be kept in mind that each of Clusters "A," "B," and "C" consists of a set of contiguous counties, while "Group D" is made up of three counties which are not contiguous to each other, although points in all three counties are within a 50 mile radius from the seat of the Medical School County. Group D as well as each of the three Clusters A, B, and C, however, is made up of counties which are economically and demographically very similar to one another.

At first sight, the results of Table 4 are almost as unsystematic as those of Table 3. It is true that the counties of Cluster A -- the one in the economically less advantaged region -- score lower than any of the others. But among the remainder, variations within clusters quite match those between clusters. Again this is true whether the unadjusted or the adjusted score is considered. (The "double adjusted" score in the last column of Table 4 may be disregarded for now; it will be referred to later in the chapter.)

An attempt was made to see if a clearer picture would emerge if counties containing hospitals approved for internship and residency were singled out. This still left a contradictory picture. Only when hospitals approved for residency but not for internship, as well as the internship hospitals, are taken to qualify a county as "containing a training hospital," does a pattern emerge in Table 4. (This pattern is highlighted in the printing of Table 4 by the offsetting of the figures for these "counties containing a training hospital .")

In each cluster and group, it can now be seen, the counties containing a training hospital outrank the others in the (unadjusted) grand score--with the partial exception of Kern County in Cluster C. The same is true when scores are adjusted for the Age-Specialization Typology, although the differentials are now very much reduced (but more consistent in direction).

One may at least tentatively infer that basic economic-demographic characteristics have a bearing on the information levels of physicians (even after the effects of specialization, and recency and length of training have been discounted), but that, once the factors are held constant, the counties with the better hospitals --i.e., with hospitals at least approved for residency training--have the better-informed physicians.

Contextual and Individual Effects of Training Hospitals, Age, and Specialization

The last-mentioned fact, comforting if not surprising in itself, attains greater interest when it is realized that the physicians' individual hospital affiliation -- as distinguished from the type of hospital available in his county -- does by no means bear so straightforward a relationship to his information level. Table 5 shows the mean information scores -- unadjusted, as well as adjusted for the age-specialization typology -- for physicians affiliated with hospitals of five different training levels, as well as for physicians not affiliated with any hospitals. (A separate line records the scores of 36 physicians who were affiliated with more than one hospital and were unable to designate which of them was their home base, nor at which they spent more time.) Although the scores for the completely unaffiliated physicians are distinctly lower than for the others, no consistent trend appears among the different hospital types -- either before or after adjusting for training and specialization. Even when the hospital categories are reduced to two (those at least approved for residency, vs. all others), to correspond to the finding of Table 4, no meaningful difference (in the anticipated direction) emerges.

Perhaps differences related to individual hospital affiliations, like those related to the accessibility of hospitals in one's county, can only emerge when the county clusters and groups are considered separately. Table 6A, however, contradicts this expectation with regard to unadjusted scores, as does Table 6B with regard to scores adjusted for the Age-Specialization Typology.

In the light of these negative findings, the positive finding of Table 4, which showed counties containing "training hospitals" to be superior to others in each geographic cluster and group, takes on added meaning. Evidently the availability in a county of a "training hospital" bears a positive relationship to the information levels of the physicians practicing there, over and above the possible (and so far undocumented) superiority of the physicians affiliated with these hospitals. Whether this simply means that counties containing such hospitals are also otherwise medically more advantageous counties, which either attract better physicians or offer them other learning advantages besides the presence of the training hospitals; or whether it means that the presence of the training hospital has an impact on the knowledge levels of even the physicians not affiliated with them -- perhaps through the percolation of knowledge from affiliated to unaffiliated physicians in the same locality -- remains to be seen.

The above indication of a "contextual effect" of the presence in one's county of training hospitals, even if one is not affiliated with them, raises the question whether the other major factors considered so far -- training and specialization -- may not also exercise a contextual effect: perhaps the presence of many specialists or many recently trained physicians in a county bears a relationship to the knowledge levels of even the generalists and older men there.

Table 7 shows, indeed, that knowledge levels for older as well as for younger physicians are higher in those counties where the average physician's age is young than in the rest of the counties. Table 8 shows similarly that the information levels of general practitioners as well as of specialists are higher in those counties containing many specialists than in those containing few. Table 9 shows the latter to be true even when younger and older physicians are considered separately.

Economic and Demographic Factors and the Question of Structural Mechanisms

Because of the apparent role played by the geographic clustering in determining the knowledge levels of physicians in each county, one may wish to ask which of the economic and demographic characteristics of counties are associated with the information scores of the doctors practicing there. Table 10 shows the correlations of grand scores -- both unadjusted and adjusted for age-specialization type -- with selected economic-demographic characteristics of counties.[1] Several of these coefficients are remarkably high. It must, however, be realized that most of these economic-demographic variables are also highly intercorrelated with each other (Table 11), so that the high coefficients in Table 10 are by no means additive.

It should also be noted that the correlations between economic-demographic characteristics on the one hand, and knowledge levels of physicians on the other, high as they are, give no indication whatsoever as to the mechanisms through which these knowledge levels are achieved, and thus in no sense reduce the desirability of the study of these mechanisms. Granted, for the moment, that the richer counties have the better informed physicians -- how does this come about? It is plausible enough that richer localities offer more material rewards to physicians and therefore attract and/or retain the better-trained doctors. However, we have already seen that county differentials remain when specialization and length and recency of training are allowed for. Perhaps these communities attract and/or retain physicians who are more active participants in continuing education; that this is not the whole story by any means, is shown by the differentials remaining when journal reading and postgraduate course attendance -- the keeping-up activities most strongly related to knowledge levels -- are allowed for.[1] Probably richer counties have, on the average, better medical learning facilities. True enough, and that this has a bearing on the knowledge levels of local physicians was documented above; but the effect seems to operate in an indirect way which remains to be traced out. Somehow, these favored counties favor higher knowledge levels among their physicians--in part, no doubt, by selecting out physicians better trained to begin with, in part perhaps, by attracting or retaining physicians who are more active learners, in part by offering them easier access to training hospitals or other learning facilities -- and in part, we surmise, by fostering standards, traditions, colleague contacts and a social structure among the local physicians which constitute better medical learning climates. Just what aspects of this social structure are relevant, and what impact they have on physicians' knowledge levels, is the subject matter of later chapters. That the local physicians themselves perceive differentials in the qualities of the learning climates is shown in the last part of the present chapter.

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[1] Source: 1962 County and City Data Book, U.S. Bureau of the Census.

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[1] This is shown in the last column of Table 4. The partial coefficient between county and information level, beta^2, is not reduced much further by adding specialty journal reading and postgraduate-course attendance as controls to the age-specialization typology. (.046 compared to .052) The squared multiple correlation (Pearsonian with dummy variables) between county, age-specialization type, journal reading, and course attendance jointly, on the one hand, and grand score on the other (N = 413) is $R^2 = .475$.

Table IV - 1

Counties and Information Score Means

County	Hypertension Score	Steroid Score	Bacterial Infection Score	Grand Score	Adjusted Grand Score a/
Stone	55.4	56.1	54.0	54.9	54.6
View	50.6	58.3	50.3	52.8	51.8
Pro	48.5	59.0	57.3	53.0	51.7
Wood	46.1	49.7	49.7	48.7	51.5
Hunts	48.1	50.6	51.2	49.1	51.3
Hern	52.7	52.0	58.2	54.1	50.4
Rise	53.7	49.2	50.9	51.1	50.0
West	46.1	56.2	42.5	48.0	49.3
Fisher	45.5	49.1	51.3	48.3	49.2
Xim	51.6	47.9	50.5	50.1	47.3
Ate	56.5	49.9	44.5	47.5	46.4
Mine	45.3	42.9	42.8	43.7	45.9
Olde	41.5	43.7	40.6	41.6	43.8
Shafts	41.3	35.9	39.5	38.5	43.6
Unweighted Mean of Above	48.8	50.1	48.8	48.7	49.0
Standard Deviation (N = 14)	4.8	6.3	5.7	4.8	1.7
Medical School County	50.0	50.8	52.3	50.5	49.5

a/ controlling for age-specialization typology

Table IV - 2

Counties and Information Score Ranks

County	Hypertension Rank	Steroid Rank	Bacterial Infection Rank	Grand Score Rank	Adjusted Grand a/ Score Rank
Stone	2	4	3	1	1
View	6	2	8	4	2
Pro	7	1	2	3	3
Wood	10	8	9	8	4
Hunts	8	6	5	7	5
Hern	4	5	1	2	6
Rise	3	9	6	5	7
West	9	3	12	10	8
Fisher	11	10	4	9	9
Xim	5	11	7	6	10
Ate.	1	7	10	11	11
Mine	12	13	11	12	12
Olde	13	12	13	13	13
Shafts	14	14	14	14	14

a/ Controlling for degree of age-specialization typology.

Table IV - 3

Medical Learning Facilities And Information Levels of Counties

Facilities in or near county	Grand Score	Adjusted[a/] Grand Score
medical school in county	50.5	49.5
internship hospital, but no medical school in county, and:-		
county is near medical school	53.0	51.7
county is not near any medical school	51.1, 43.7	50.0, 45.9
residency hospital, but neither internship nor medical school in county, and:-		
county is near an internship hospital	54.9	54.6
county is not near any internship hospital	52.8	51.8
no residency, internship, or medical school in county, and county is:-		
near medical school selected above	50.1, 47.5	47.3, 46.4
near an internship hospital selected above, but not near any medical school	54.1, 48.0, 41.6, 38.5	50.4, 49.3, 43.8, 43.6
not near any medical school or internship hospital	49.1, 48.7, 48.3	51.3, 51.5, 49.2

[a/] Controlling for age-specialization typology.

Table IV - 4

Geographic Clusters, Medical Learning Facilities, and Information Levels of Counties

Medical Learning Facilities in County [c]:		County:	Mean Information Score For Each County Grand Score	 Adjusted Grand Score [a]	 Double Adjusted Grand Score [b]
medical school		Medical School County	50.5	49.5	49.5
		Cluster A			
internship & residency	A-1	Mine	43.7	45.9	46.2
none	A-2	Olde	41.6	43.8	45.2
none	A-3	Shafts	38.5	43.6	43.9
		Cluster B			
residency only	B-1	View	52.8	51.8	50.8
none	B-2	Wood	48.7	51.5	49.9
none	B-3	Hunts	49.1	51.3	50.5
none	B-4	Fisher	48.3	49.2	48.8
		Cluster C			
internship & residency	C-3	Rise	51.1	50.0	50.2
residency only	C-1	Stone	54.9	54.6	55.3
none	C-2	Hern	54.1	50.4	51.0
none	C-4	West	48.0	49.3	49.1
		Group D			
internship & residency	D-1	Pro	53.0	51.7	51.4
residency only	D-2	Xim	50.1	47.3	46.3
none	D-3	Ate	47.5	46.4	46.0
			eta^2 = .111	$beta^2$ = .052	$beta^2$ = .046

a/ Controlling for Age-Specialization Typology

b/ Controlling for Age-Specialization Typlogy, number of postgraduate courses attended, and number of specialty journals read.

c/ "none" in this column means no medical school nor hospital approved for either internship or residency in county.

Table IV - 5

Hospital Affiliation and Information Score

Type of Physician's Home Base Hospital	Grand Score		Adjusted Grand Score[a]		Number of Interviewed Physicians
No hospital affiliation	36.7		43.3		(14)
Non-general hospital	48.2		46.2		(5)
Non-accredited General Hospital	50.3	49.0	51.3	49.2	(39)
Accredited General Hosp., but not approved for internship or residency	48.6		48.5		(118)
Accredited General Hospital, Approved for:					
Residency only (in fewer than 5 fields)	53.8	49.1	54.1	49.6	(33)
Internship and residency in fewer than 5 fields	49.2		48.8		(134)
Internship and residency in 5 fields or more [a]	48.4		48.4		(39)
Cannot designate a home base among his hospitals	50.2		48.3		(31)

[a] Includes medical-school affiliated hospital

Table IV - 6 A

Geographic Clusters, Hospital Affiliation, and Information Score

Type of Physician's Home Base Hospital [a/]	Mean Grand Score (Number of Physicians in Parenthesis)				
	County Cluster A	County Cluster B	County Cluster C	County Group D	Medical School County
Non-accredited General Hospital	--	51.4 (11)	50.5 (26)	41.5 (2)	--
Accredited General Hosp., but not approved for internship or residency	42.7 (39)	48.6 (30)	58.4 (10)	46.4 (16)	55.8 (23)
Approved for:					
Residency only (in fewer than 5 fields)	--	51.8 (12)	55.4 (18)	53.3 (3)	--
Internship and residency in fewer than 5 fields	42.8 (40)	--	50.6 (53)	54.3 (30)	52.1 (11)
Internship and residency in 5 fields or more [b/]	--	--	--	--	48.6 (39)

a/ Excludes physicians who could not designate one hospital as their home base and physicians who reported no hospital affiliation.

b/ Includes medical-school affiliated hospital.

Table IV - 6 B

Geographic Clusters, Hospital Affiliation, and Information Score

Adjusted for Age-Specialization Typology

Type of Physician's Home Base Hospital[a]	Adjusted Mean Grand Score[c] (Number of Physicians in Parenthesis)				
	County Cluster A	County Cluster B	County Cluster C	County Group D	Medical School County
Non-accredited General Hospital	--	53.5 (11)	51.1 (26)	40.3 (2)	--
Accredited General Hosp., but not approved for internship or residency	44.8 (39)	49.4 (30)	53.3 (10)	45.9 (16)	53.2 (23)
Approved for:					
Residency only (in fewer than 5 fields)	--	53.5 (12)	55.2 (18)	49.8 (3)	--
Internship and residency in fewer than 5 fields	45.3 (40)	--	49.4 (53)	51.5 (30)	48.7 (11)
Internship and residency in 5 fields or more[b]	--	--	--	--	48.4 (39)

a/ Excludes physicians who could not designate one hospital as their home base and physicians who reported no hospital affiliation.

b/ Includes medical-school affiliated hospital.

c/ Controlling for Age-Specialization Typology.

Table IV - 7

Grand Score for Younger and Older Physicians in Counties With Younger and Older Physicians

Year of Graduation From Med. School	Younger Counties [a]	Older Counties [b]	Total	Difference
1945 or Later	55.8 (99)	52.2 (61)	54.5 (160)	+3.6
1944 or before	44.5 (76)	42.5 (95)	43.4 (171)	+2.0
Total	50.9 (175)	46.3 (156)	48.7 (331)	
Difference	+11.3	+9.7		

[a] 8 counties where average graduation year of those interviewed was 1942 or later.

[b] 6 counties where average graduation year of those interviewed was 1941 or earlier.

Table IV - 8

Grand Score by Specialty, in Counties With High and Low Numbers of Specialists

Specialization:	High Specialization Counties[a]	Low Specialization Counties[b]	Total
Board Diplomates	60.4 (28)	55.8 (4)	59.8 (32)
Internists without Boards	53.6 (33)	45.1 (22)	50.1 (55)
General Practitioners	48.9 (128)	44.6 (116)	46.9 (244)
Total	51.0 (189)	45.1 (142)	48.7 (331)

[a] 7 counties where more than one-fourth of the interviewed physicians were specialists.

[b] 7 counties where not more than one-fourth of the interviewed physicians were specialists.

Table IV - 9

Grand Score by Specialization and Recency of Graduation, In Counties With High and Low Numbers of Specialists

YOUNGER PHYSICIANS
(1945 or Later)

Specialization:	High Specialization Counties[a]	Low Specialization Counties[a]	Total
All Internists	64.0 (24)	60.9 (7)	63.4 (31)
General Practitioners	53.7 (66)	50.7 (63)	52.1 (129)
Total	56.5 (90)	51.8 (70)	54.5 (160)

OLDER PHYSICIANS
(1944 or Before)

Specialiaation:	High Specialization Counties[a]	Low Specialization Counties[a]	Total
All Internists	52.0 (37)	41.6 (19)	48.6 (56)
General Practitioners	43.6 (62)	37.6 (53)	40.9 (115)
Total	46.3 (99)	38.1 (72)	43.4 (171)

[a] See Notes a and b, Table IV - 8.

Table IV - 10

Socio-Economic Factors and Information Levels of Counties

(Pearsonian Correlations; N = 14)

	Correlation with Grand Score	Correlation with Adjusted Grand Score[a/]
Unemployment	-.826	-.754
Population growth, 1950-60	.696	.450
Median School Years	.660	.339
Median income	.554	.378
Percent population urban	.387	.261
Percent population over 65	-.285	-.055
Population size (rank)	-.065	-.186

[a/] Controlling for Age-Specialization Typology

Table IV - 11

Intercorrelations Among Socio-economic Factors of Counties

(N = 14)

	Growth	Schooling	Income	Urban	Aged	Size
Unemployment	-.638	-.650	-.495	-.276	.237	.298
Population Growth, 1950-60	---	.826	.819	.463	-.739	.313
Median school years		---	.781	.419	-.620	.205
Median income			---	.714	-.857	.571
Percent population urban				---	-.764	.561
Percent population over 65					---	-.768
Population size (rank)						

Chapter V

The Structure of Advisorship Systems, and the Knowledge Levels in Each County

It is our task to investigate the structural attributes of the communication networks linking medical pratitioners in each community--in each county, to be exact. This will make it possible to see which of these attributes characterize the local communication systems that are most effective and most conducive to a high level of awareness of recent medical developments. Chief interest lies in the advisorship structure of each county--the network of physicians related to each other through the habitual asking for medical information, opinion, and advice.

The present chapter will introduce concepts and measures for describing the advisorship structure of each county. The distribution of these measures over the 14 counties[1] will be shown, and their relation to the average information levels in each county will be reported. These correlations do not, of course, allow any direct inference as to the possible causal connections between the nature of the advisorship structure and the information levels. We will address ourselves to the question of these possible causal connections in Chapter VII, after having examined in Chapter VI the connection between each physician's individual information level and his integration in the community of colleagues.

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[1] A fifteenth county--the Medical School County--is omitted from most analysis in this and subsequent chapters because of the relatively low sampling ratio used there. See also p. IV-5.

Broadly speaking, the characteristics by which the advisorship system of each county will be described are the following:

> each advisors' own information levels;
>
> the specialization of advisorship, or the degree to which different advisors are named for each eare of medicine;
>
> the dispersion of advisorship, or the degree to which advisorship nominations are distributed over many physicians, rather than being concentrated on a few in each county;
>
> ease of access between advisors and advisees;
>
> and the degree of utilization of advisors .

In addition, each county will also be characterized by certain measures of the overall integration of the local medical community, aside from the advisorship system.

Basic Relational Data

The measures for all these structural concepts are based on certain relational data obtained in the course of the interviews with the sampled practitioners. These data identify for each interviewed physician the local colleagues who play each of the five roles listed below in relation to him.

1. General Advisor - This is the colleague named in answer to the following question, asked rather early in the interview:

> Q. 11.A.--Supposing you wanted to ask another doctor for information and advice about some recent medical development--whom would you be most likely to ask?

Doctors who insisted that this question could not be answered without specifying the field of medicine in question were asked:

> Q. 11.B.--Let's say it's a matter of internal medicine--whom would you be most likely to ask?

If more than one name resulted, tabulations reported below refer to the "First General Advisor"--that is, to the one whom the interviewed physician indicated as the most frequently asked advisor, or, failing such indication, to the one for whom no specialty limitation was expressed. (Any remaining ties were resolved in favor of the colleague named first.) [1]

2. Hypertension Advisor - This is the colleague named in answer to the following question, which was separated from the above "general advisor" question by a substantial number of questions about the problem of "keeping up."

> Q. 21.A.--Suppose you had a question about recent developments in the management of hypertension, where would you go for an answer?

If the answer given did not refer to any colleagues, the doctor was subsequently asked:

> Q.22.A.--If you wanted to ask another doctor about recent developments in the management of hypertension, whom would you be most likely to ask?

If only the title or category of a doctor had been given (e.g., "our chief of medicine," or "one of the younger men on our floor.") his name was explicitly asked for as well (Q.22.B.) If more than one doctor had been named, one was singled out by means of the question "Who would it be most often. (Q.23.A.) or, failing that, by an arbitrary choice of the interviewer. Next, the physician was asked what was this hypertension advisor's special field of interest, if any, and whether he was someone with whom the interviewed physician talked shop in the ordinary week (Q.23.B-D).

---

[1] A few of the tabulations, to be indicated in each instance, include also the "Second General Advisor" of those physicians who gave more than one name in response to Question 11--i.e., the name ranked second according to the criteria above.

Yet other calculations will make reference to the "First Interviewed General Advisor." This is the same as the First General Advisor, provided he was interviewed; if the First General Advisor was not interviewed, but another colleague who was also named in answer to Question 11 was interviewed, then that colleague is considered the "First Interviewed General Advisor;" (if more than one interviewed colleague were named, one was selected according to the same criteria as mentioned above). Similar rules apply to "Second Interviewed General Advisor."

3. Steroid Advisor - A similar set of questions about the use of steroids was put to the physician after some intervening questions about hypertension. If a physician replied that he would go to the same doctors with steroid questions as with hypertension questions, the name or names he had given with regard to hypertension was read off to him to make sure whether he meant literally the same colleagues.[1]

4. Discussion Partner - At a much later point in the interview, after the information test questions, and in the context of keeping-up activities, including possible visits to hospitals or medical centers in other cities, the physicians were asked:

> Q. 70--And back here in (your own city or county), who are the three physicians with whom you most often find yourself talking shop in the course of an ordinary week?

All three of the physicians named in answer to this question were to be considered "discussion partners."[2]

5. Office Partner - The names of any office partners were recorded for each interviewed physician. Address listings served as the basis, but where necessary office partners were distinguished from other doctors in the same building by means of names on the door and questions asked of nurses or receptionists. (Cf. Questions 2 E and Item 103 of the interview schedule.)

---

[1] In View, Wood, Hunts and Fisher Counties, the questions about steroids preceded those concerning the management of hypertension in this section of the interview.

[2]

The physicians were also asked directly how many other doctors, if any, shared their office (Q. 2). In case of doubt, the broadest possible definition of "office sharing" that occurred to the doctor was used, including "just having a common waiting room" or the like.

Medical Sociability

In addition to the identification of colleagues standing in particular role relationships to each interviewed physician, the doctor was also asked

> Q. 88--Would you think for a moment of the three friends whom you see most often socially--How many of them are doctors?

and

> Q. 89--About what percentage of your free time do you spend in the company of other doctors?

Answers to these two questions were combined into an Index of Medical Sociability in the manner shown in Table 1.

Advisors' Own Information Levels

Who was named General Advisor in answer to Q. 11? How were these nominations related to the type of practice and to the information level of the person nominated?

General Advisorship nominations fell on only 71 of the 331 interviewed physicians,[1] and these achieved an average grand score of 56.8. The average score of the 260 physicians who received no general advisorship nominations, by contrast, was only 46.5. Thus, the first two things to be noted about general advisorship nominations is that they were selective, and that they selected the better informed physicians.

---

[1] This is so although nominations of Second as well as of First General Advisors were considered.

On the other hand, possible nominations of Interviewed General Advisors were only considered if they were identical to the First or Second General Advisor. (Cf. Note, p. V-3)

Figures given above do not include Medical School County. (Cf. Note, p. V-1)

Thirdly, the nominations selected specialists disproportionately by a wide margin. Sixty-one per cent of the internists, but only seven per cent of the general practitioners were named as advisors. Looking at it the other way, internists made up 75% of those named as advisors but only 13% of the others.

Is the higher average information level of advisors, then, due to the fact that advisors were predominantly specialists? Not so, Table 2 shows. Even with specialty controlled, advisors consistently achieve higher average scores than non-advisors (58.1 as compared to 47.2 among the internists; 52.9 as compared to 46.4 among the generalists.)

The counties differ considerably from each other in the proportion of specialists present, and this differential availability of specialists naturally is reflected in the manner in which nominations as general advisors are distributed between specialists and general practitioners. This is easily seen in Table 3, where counties are grouped into those where more than one-fourth of the interviewed physicians were specialists, and into those where one-fourth or fewer of them were specialists.

Where specialists are in relatively rare supply they naturally constitute a smaller portion of the advisors(13 out of 23 or 56%) than where specialists are plentiful (40 out of 48, or 83%). But this is not, perhaps, because the supply of specialists is sooner exhausted, and advice can then only be sought from general practitioners. On the contrary, even in comparison to their availability, specialists are less sought out for advice in the low-specialization counties, where only 50% of the internists were nominated as advisors, than in the high-specialization counties, where 66% of the internists were so nominated.

This apparent paradox is at least partly explained when one considers the different information levels of internists and general practitioners in high-specialization and low-specialization counties. The proportion of specialists available in a given community affects not only the distribution of advisorship nominations between specialists and general practitioners, but also between physicians of different information levels. This is seen in Table 4.

The information-level differences between specialists and generalists are considerably greater in the high-specialization counties than elsewhere. Consequently, by chosing the bulk of their advisors from among the specialists, the physicians in the high-specialization counties almost guarantee a high information level among their advisors; and a general practitioner is not nominated as advisor unless his information-level is truly outstanding. In the low-specialization counties, by contrast, where the average internists is not much better informed than the average general practitioner, physicians exercise, apparently, more discrimination in selecting only the top half of the internists as advisors. They fill in the advisor roster somewhat more liberally from among the general practitioners; and this seems a wise choice, since the bottom half of the internists in these counties average even lower on the Grand Score than do the local general practitioners who were not named as advisors (to say nothing of those who were named). In every other respect, throughout Table 4 internists excel over general practitioners, advisors are better informed than non-advisors, and physicians in each category achieve higher scores in the high-specialization counties than do their counterparts in the low-specialization counties.

The relationship of the information levels of the chosen advisors to the general information level in each county is displayed in Table 5. It records for each county the mean grand score achieved by advisors and by all interviewed physicians, as well as the adjusted form of the latter, controlling for specialization and recency and length of training by means of the Age-Specialization Typology. Advisors' and (unadjusted) general scores are naturally highly related to each other, as expressed by the Pearsonian correlation coefficient of $r = .806$. The relationship of advisors' scores to the adjusted general scores is $r = .609$.

Specialization of Advisorship

Do physicians use the same colleague as a source of information, opinion, and advice in all medical fields, or do they have special advisors in each field? This is indicated in the data of this study by the extent to which physicians will name the same colleague or different colleagues as "general advisor," "hypertension advisor," and "steroid advisor." When a different advisor relationship exists for each of these three choice situations, we shall speak of high specialization of advisorship; when all three are subsumed under one relationship, we shall speak of low-specialization of advisorship.

The measurement of the specialization of advisorship is complicated by the fact that only just over one-half of the interviewed physicians[1] named a general advisor, a hypertension advisor, and a steroid advisor as well.[2]

---

[1] Excluding Medical School County. Cf. Note, p. V-1.

[2] This is true even though all nominations of general advisors, interviewed or not, in the county or not, are considered. Cf. Note, p. V-6.

(In fact, 59 of the 331 physicians interviewed in the 14 counties[1] did not name anyone who had been interviewed as an advisor.) Of the 177 physicians who did give a name in answer to all three questions, only 19 gave three different names; 66 gave two different names (one of which covered two of the three choice situations); and fully 92 indicated that the same person played all three of the advisorship roles about which they were interrogated. Of the 52 physicians who gave names of interviewed physicians in answer to only two of the advisorship questions, about two-thirds made one name cover both situations. This is shown in Table 6. Table 6 also shows that the 331 interviewed physicians yielded not 3x331 = 993, but only 678 nominations of physicians, and that these 678 nominations of physicians contained only 395 different names.

The particular combinations of advisor roles which were most often played by the same individual can be seen in Table 7. In the latter respect, the three advisor roles are strikingly similar. Of the 678 nominations that were made, 276 or 41% are covered by 92 "triple-duty" nominations of the same colleague in all three roles. Such triple-duty nominations constitute 39% of the general advisorship nominations, 40% of the hypertension advisor nominations, and 43% of the steroid advisor nominations. At the other extreme, 34% of the general advisor nominations were given to colleagues who did not play either of the other advisor roles vis-a-vis the respective nominating physician. The same is true for 25% of the hypertension advisor nominations, and for 31% of the steroid advisor nominations. Altogether, 30% of the nominations were given to a colleague in one role only.

---

[1] Excluding Medical-School County.

The advisor roles that were most often combined in pairs were general advisor and hypertension advisor (43 out of 99 double-duty nominations), and the ones least often combined were general advisor and steroid advisor (20 out of the 99).

A measure of the overlap in nominations between any two advisor roles is obtained by considering the number of overlapping nominations for the two roles, and comparing it with the total number of nominations made for each role. In the case of general advisorship and hypertension advisorship, for example, Table 7 shows that there were 135 overlapping nominations (43 among the double-duty nominations, plus the 92 triple-duty nominations). Altogether, there were 235 general advisor nominations and 228 hypertension advisor nominations. A possible measure of the amount of overlap is therefore

$$\frac{135}{\sqrt{235 \times 228}} = .582,$$

or, the number of overlapping nominations expressed as a fraction of the geometric mean of the total number of nominations for the two roles involved. A convenient measure of Specialization with respect to any two roles is one minus the above term--in the case of general and hypertension advisorship,

$$1 - .582 = .418$$

More generally, the formula for the measure of specialization with respect to any two advisor roles is

$$1 - \frac{\text{Number of overlapping nominations}}{\sqrt{\text{Total nominations for Role 1 x Total nominations for Role 2.}}}$$

Table V - 8 shows how these caluculations were carried out, and records in Row (d) their results for specialization as between hypertension and steroid advisorship (.422), between general and hypertension advisorship

(.418), and between general and steroid advisorship (.502).

The average of the last two values is .460. It is this that serves as an overall Index of Advice Specialization; its value, calculated for each of the 14 counties, is recorded in Table 9, Column (4); the average over the 14 counties is .475. The correlation of this index with the average grand scores of counties is r = .372; with grand scores adjusted for Age-Specialization Typlogy it is r = .271.

Dispersion of Advisorship

Are nominations of general advisors in each county spread over many physicians, or concentrated on a few?

In order to obtain a measure of the dispersion of general advisor nominations, the total of such nominations[1] made in each county was first determined. Next, the recipients[2] of these nominations were ranked from those nominated by the largest number of doctors in the given county to those named only by a single colleague. The number of these recipients which was required to account for half of the nominations made in the county was ascertained. Divided by the number of physicians interviewed in the county, and multiplied by a 100, it is shown in Table 9, Column 5, as a measure of Advice Dispersion in each county. It may be approximately interpreted as the percent of interviewed physicians necessary to account for 50% of the general advisor nominations received from the doctors in each county.[2]

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[1] Only nominations of First General Advisors were considered in this calculation. Cf. Note, p. V-3.

[2] This interpretation is only approximate, for while nominations and recipients were counted, regardless of whether the recipients had been interviewed or not, and regardless of whether they practiced in the same or a neighboring county, the denominator of the index consists only of the physicians interviewed in the given county.

The correlation of this index with the average information levels of counties is negligible.

Overall integration of the local medical community

Up to this point, the examination of characteristics of the advisorship structure of each county first considered the information levels and type of practice of those chosen as advisors, and then what may be called formal characteristics of the advisorship structure--the specialization and dispersion of advisorship relationships. One may now consider two aspects of the extent to which communication channels span entire local medical community which make no direct reference to advisorship.

Nominations of discussion partners are generally far more widely dispersed than those of advisors, and this goes for general advisors, hypertension advisors, and steroid advisors as well. Nevertheless, the degree of dispersion of discussion nominations, as well as that of advisor nominations, differs from county to county. This dispersion, or rather its inverse, consensus in the nomination of discussion partners, was measured by a different index than in the case of Advice Dispersion. Consensus on discussion nominations was measured by an index recommended by James Coleman.[1] This index is recorded in Table 9, Column 6. It shows only a weak correlation with County Grand Scores, which if surther attenuated when adjusted grand scores are used.

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[1] See Coleman, James S., An Introduction to Mathematics for Sociologists, , p. 439. Reference is to a "source-oriented measure of hierarchization" symbolized as h_1.

A second aspect of the network of relationships in a medical community concerns office partnerships. What percent of the local physicians have office partners? This is recorded in the last column of Table 9, and yields a quite considerable relationship with knowledge scores (r = .339), and an even higher one with scores adjusted for Age-Specialization Type (r = .557).

Ease of Access to Advisors

Ease of access to the advisors of each county is measured by three different indexes. The first of these concentrates on the ease of access of each advisee to his own advisor, and rests on the assumption that a physician has easier access to a chosen advisor whom he also names as one of "the three physicians with whom you most often find yourself talking shop in the course of an ordinary week" than to one whom he does not include in that number. The index consists, accordingly, of the per cent of the advice pairs in the county which are also discussion pairs--more precisely, the per cent of advisor nominations made by physicians in each county, which went to colleagues who were also named as discussion partners by the same physicians.

This percentage varies all the way from 14 per cent in Fisher County to 80 per cent in Shafts County, as is shown in Column (4) of Table 10. It shows no noteworthy correlation with the average grand scores of the counties, adjusted or not.

A second measure of ease of access to the advisors of a given county also uses discussion partnership as an indication of easy access, but while the first index concentrated on the possible discussion partnership between each advisee and his own advisor, the second index asks rather: do physicians who were not named by any colleagues as advisors mingle freely with those who were? Or do advisors tend to talk shop only to other advisors, non-advisors only to other non-advisors? The extent to which the latter is the case in each county is measured by an Index of Advisorship Homophily in Discussion Pairs, shown in Column (5) of Table 10.[1] Although the value of the index varies considerably from county to county, its correlation with information scores, although negative as expected, is very low.

The last index shown in Table 10 consists simply of the percent of the advice pairs in each county of which both the advisor and the advisee rated "high" on the Index of Medical Sociability, first described on p. V-5 and in Table 1. This index correlates quite highly with information scores of counties, both adjusted and unadjusted; it is not clear, however, whether this is peculiar to the medical sociability of advice pair members, or rather to the medical sociability of physicians in a county generally.

Degree of Utilization of Advisors

Physicians in all counties responded readily and with evident familiarity to the interviewers' questions about asking colleagues for information and advice, and evidently accepted the notion that physicians do exchange such advice with one another. With some exceptions, they also acknowledged that for each physician some colleagues stand out among the rest as the most likely targets of such requests. Nevertheless, it could be argued that the notion of advisorship was imposed on the physicians by the research design. It is therefore important to know to what extent advisors--if such there be--are actually utilized by the physicians in each county.

---

[1] This index would have a value of +1 if advisors and non-advisors never combined into discussion pairs, -1 if each discussion pair consisted of one advisor and one non-advisor, and 0 if advisors and non-advisors combined into discussion pairs in proportion to their availability in the population.

One crude indicator of this consists of the per cent of the interviewed physicians in each county who named a colleague in answer to the question,

> Q. 11.A.--Supposing you wanted to ask another doctor for information and advice about some recent medical development--whom would you be most likely to ask?

We have already seen (Table 6) that 82% of the interviewed physicians gave a name in answer to at least one of the three advice questions (the just-quoted "General Advice" question, the Hypertension Advice Question, and the Steroid Advice question). Two hundred thirty five, or 72%, of the 331 physicians interviewed in the 14 counties now being examined gave a name in answer to the General Advice Question itself (see Table 7). From county to county this percentage varies from a low of 38% to a high of 88%. There is a moderate positive correlation between this measure of advisor utilization and the county Grand Score (Table 11).

Intercorrelations of Structural Characteristics

The characteristics of the advisorship structure of each county, which have been described in this chapter, are intercorrelated to varying degrees, as is shown in Table 12.

Table 13 recapitulates, by way of summary, the correlation of each of the structural characteristics with county Grand Scores, both unadjusted and adjusted for Age-Specialization Type. We repeat that any inferences about possible causal relationships between the structural characteristics and information levels must await the examination, in subsequent chapters, of the connection between each physician's individual score and the degree to which he is in touch with the community of his colleagues.

Table V - 1

Index of Medical Sociability

	Number of doctors among 3 friends				Percent of Interviewed Physicians[a]
Percentage of free time spent with other doctors:	Three	Two	One	None	
More than 10%					
5% - 10%		High		Low	
Less than 5%		(52%)		(48%)	
Percent of interviewed physicians	10%	15%	29%	46%	

---

[a] of 405 answering these questions including Medical School County.

Table V - 2

Advisorship, Specialty, and Information Level

Nominations Received as General Advisor:	Internal Medicine	General Practice	Both Types of Practice
Named	58.1 (53)	52.9 (18)	56.8 (71)
Not Named	47.2 (34)	46.4 (226)	46.5 (260)
All Interviewed Physicians	53.8 (87)	46.9 (244)	48.2 (331)

Table V - 3

Advisorship and Specialty in High and Low Specialization Counties

	Per Cent Receiving Advisorship Nominations		
	Internists	General Practitioner	Both types of Practice
High-Specialization Counties[a]	66% = 40 (61)	6% = 8 (128)	25% = 48 (189)
Low-Specialization Counties[b]	50% = 13 (26)	9% = 10 (116)	16% = 23 (142)
All 14 counties	61% (87)	7% (244)	21% (331)

a/ 7 counties where more than one-fourth of the interviewed physicians were specialists

b/ 7 counties where not more than one-fourth of the interviewed physicians were specialists

Table V - 4

Advisorship, Specialty, and Information Level in High and Low Specialization Counties

	High Specialization Counties[a]		
	Internists	General Practitioners	Both Types of Practice
Mean Grand Scores of Physicians:			
Named as General Advisors	59.7 (40)	58.2 (8)	59.4 (48)
Not named	51.4 (21)	48.2 (120)	48.6 (141)
All (cf. Table IV-8)	56.8 (61)	48.9 (128)	51.0 (189)

	Low Specialization Counties[b]		
	Internists	General Practitioners	Both Types of Practice
Mean Grand Scores of Physicians:			
Named as General Advisors	53.2 (13)	48.8 (10)	51.2 (23)
Not named	40.4 (13)	44.3 (106)	43.9 (119)
All (cf. Table IV - 8)	46.9 (26)	44.6 (116)	45.1 (142)

[ab] See Notes a b, Table V - 2

Table V - 5

Advisors' Information Levels and Information Levels of Counties

County	Number Interviewed	Grand Score	Adjusted Grand Score[a]	Advisors' Grand Score
Stone	27	54.9	54.6	65.4
View	18	52.8	51.8	57.7
Pro	32	53.0	51.7	60.1
Wood	17	48.7	51.5	52.6
Hunts	14	49.1	51.3	47.3
Hern	16	54.1	50.4	59.0
Rise	57	51.1	50.0	59.3
West	15	48.0	49.3	50.0
Fisher	8	48.3	49.2	50.0
Xim	19	50.1	47.3	58.7
Ate	19	47.5	46.4	55.3
Mine	51	43.7	45.9	54.6
Olde	19	41.6	43.8	50.0
Shafts	19	38.5	43.6	42.0
unweighted mean of above				54.4
Standard deviation (N = 14)				6.2
Pearsonian Correlation:- with Grand Score				r = .806
with Adjusted Grand Score[a]				r = .609

[a] Controlling for Age-Specialization Typology

Table V - 6

Number of Advisorship Roles for Which a Name was Given, and Number of Different Names Given

	Number of Advisorship Questions[a] Answered with a Name				Total Interviewed Physicians	Total yield of Names
	Three	Two	One	None		
Number of Physicians Whose Answers Yielded:-						
3 different names	19	-	-	-	19	57
2 different names	66	19	-	-	85	170
1 name (all or both the same, or only one question answered with a name)	92	33	43	-	168	168
no names	-	-	-	59	59	0
Total Interviewed Physicians:						Total =395
Number	177	52	43	59	331	
Per Cent	53%	16%	13%	18%	100%	
Total Nominations made	531	104	43	0	678	

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[a] concerning the interviewed physician's general advisor, hypertension advisor, and steroid advisor

Table V - 7

Pattern of Overlap in Advisorship Nominations

	Nominations constituting a physician's identical choice on:			
	all 3 questions	two questions	only one question	Total Nominations
Nominations as:-				
General Advisor:				
Number	92	43 20	80	235
Per Cent	3%	27%	34%	100%
Hypertension Advisor:				
Number	92	43 36	57	228
Per Cent	40%	35%	25%	100%
Steroid Advisor:				
Number	92	20 36	67	215
Per Cent	43%	26%	31%	100%
Total nominations:-				
Number	276	198	204	678
Per Cent	41%	29%	30%	100%
Different names included in total nominations:-				
Number	92	99	204	395
Per Cent	23%	25%	52%	100%

Table V - 8

Index of Advice Specialization

			Advisorship Roles			
			(1) Hypertension and Steroid	(2) General and Hypertension	(3) General and Steroid	(4) Average of (2) & (3)
Number of overlapping nominations	(n)	(a)	128	135	112	
Total nominations for each role	(r_1, r_2)	(b)	228 215	235 228	235 215	
Overlap	$o = \frac{n}{\sqrt{r_1 \times r_2}}$	(c)	.578	.582	.498	.540
Specialization	$(1 - o)$					
computed for all 331 interviewed physicians		(d)	.422	.418	.502	.460
computed for the 177 [a] complete nominators only		(e)	.332	.337	.405	.371
computed for all interviewed physicians in each of 14 counties, and then averaged		(f)	.409	.455	.495	.475

[a] I.e., those who gave a name in answer to all three advisorship questions.

Table V - 9

Specialization and Decentralization of Advice, Overall Integration, and Information Levels of Counties

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
County	Number Interviewed	Grand Score	Adjusted Grand Score[a]	Advice Specialization	Advice Dispersion[b]	Discussion Consensus	Per cent Office Sharers
Stone	27	54.9	54.6	.344	7	.604	56
View	18	52.8	51.8	.571	8	.495	67
Pro	32	53.0	51.7	.386	5	.958	25
Wood	17	48.7	51.5	.382	24	.516	66
Hunts	14	49.1	51.3	.692	11	.468	85
Hern	16	54.1	50.4	.556	7	.645	7
Rise	57	51.1	50.0	.572	6	.765	16
West	15	48.0	49.3	.542	12	.645	67
Fisher	8	48.3	49.2	.534	19	.458	50
Xim	19	50.1	47.3	.527	15	.528	53
Ate	19	47.5	46.4	.511	4	.644	22
Mine	51	43.7	45.9	.286	4	.797	26
Olde	19	41.6	43.8	.394	15	.286	21
Shafts	19	38.5	43.6	.354	5	.675	0
unweighted mean				.475	10	.606	40
standard deviation (N = 14)				.116	6	.168	26
Pearsonian Correlations:- with Grand Score				r = .372	r = -.025	r = .202	r = .339
with Adjusted Grand Score[a]				r = .271	r = .115	r = .136	r = .557

[a] Controlling for Age-Specialization Typology

[b] Per cent of interviewed physicians necessary to account for 50% of nominations received in each county.

Table V -10

Ease of Access to Advisors and Information Levels of Counties

County	(1) Number Inter-viewed	(2) Grand Score	(3) Adjusted Grand Score[a/]	(4) Per cent of Advice Pairs which are also Discussion Pairs	(5) Advisorship Homophily in Discussion Pairs[b/]	(6) Medical Sociability of Advice Pair Members[c/]
Stone	27	54.9	54.6	70.0	-.045	80.0
View	18	52.8	51.8	40.0	.460	65.0
Pro	32	53.0	51.7	71.5	-.488	62.9
Wood	17	48.7	51.5	58.2	-.035	8.3
Hunts	14	49.1	51.3	27.2	-.102	22.2
Hern	16	54.1	50.4	58.3	-.336	50.0
Rise	57	51.1	50.0	64.0	.034	62.0
West	15	48.0	49.3	41.4	-.084	42.8
Fisher	8	48.3	49.2	14.3	-.116	42.8
Xim	19	50.1	47.3	40.0	-.192	50.0
Ate	19	47.5	46.4	40.0	.024	50.0
Mine	51	43.7	45.9	50.0	.125	00.0
Olde	19	41.6	43.8	50.0	.000	00.0
Shafts	19	38.5	43.6	80.0	-.030	20.0
unweighted mean of above				48.6	-.056	39.7
standard deviation (N = 14)				20.1	.216	25.5
Pearsonian Correlation:- with Grand Score				r = -.022	r = -.211	r = .786
with Adjusted Grand Score[a/]				r = -.027	r = -.108	r = .624

[a/] Controlling for Age-Specialization Typology

[b/] Extent to which advisors disproportionately use other advisors and non-advisors use other non-advisors as discussion partners

[c/] Percent of advice pairs both of whose members report high friendship interaction with local physicians

Table V -11

Percent Who Name an Advisor and Information Levels of Counties

County	Number Interviewed	Grand Score	Adjusted Grand Score[a/]	Percent Naming an Advisor
Stone	27	54.9	54.6	74.0
View	18	52.8	51.8	83.1
Pro	32	53.0	51.7	84.4
Wood	17	48.7	51.5	70.5
Hunts	14	49.1	51.3	50.0
Hern	16	54.1	50.4	56.1
Rise	57	51.1	50.0	77.2
West	15	48.0	49.3	73.3
Fisher	8	48.3	49.2	87.6
Xim	19	50.1	47.3	57.8
Ate	19	47.5	46.4	73.5
Mine	51	43.7	45.9	74.5
Olde	19	41.6	43.8	68.4
Shafts	19	38.5	43.6	37.8
unweighted mean of above				69.2
standard deviation (N = 14)				14.1
Pearsonian Correlation:- with Grand Score				r = .415
with Adjusted Grand Score[a/]				r = .399

[a/] Controlling for Age-Specialization Typology

Table V - 12

Intercorrelations Between Characteristics of the Advisorship Structure of Counties

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Advisors' Information Levels	-.069	-.237	.334	-.055	.285	-.107	.701	.486
2. Advice Specialization	-	.091	-.285	.396	-.621	.029	.301	-.068
3. Advice Dispersion		-	-.649	.518	-.408	-.062	-.323	.091
4. Discussion Consensus			-	-.407	.479	-.343	.314	.153
5. Per cent Office Sharers				-	-.614	.226	.077	.188
6. Per cent of Advice Pairs which are also Discussion Pairs					-	-.169	.102	-.222
7. Advisorship Homophily in Discussion Pairs						-	-.112	.170
8. Medical Sociability of Advice Pair Members							-	.359
9. Per cent Naming an Advisor								-

Table V - 13

Correlations of Structural Characteristics and Information Levels of Counties

	Pearsonian Correlation with	
	Grand Score	Adjusted[a] Grand Score
Advisors' Information Levels	.806	.609
Advice Specialization	.372	.271
Advice Dispersion	-.025	.115
Discussion Consensus	.202	.136
Per cent Office Sharers	.339	.557
Per Cent of Advice Pairs which are also Discussion Pairs	-.022	-.027
Advisorship Homophily in Discussion Pairs	-.211	-.108
Medical Sociability of Advice Pair Members	.786	.624
Per cent Naming an Advisor	.415	.399

[a] Controlling for Age-Specialization Typology

Chapter VI

INTEGRATION OF PHYSICIANS INTO COMMUNICATION NETWORKS AND ITS RELATION TO THEIR INDIVIDUAL KNOWLEDGE LEVELS

A. INTRODUCTION

The preceding chapter introduced certain structural attributes for describing the network of relations among physicians of each county, and then showed, in a preliminary way, how each of these structural attributes was related to the average information level of the physicians practicing in these counties.

While the preceding chapter thus focussed on the county as the unit of analysis, the present chapter focusses on the individual physician; but it views him primarily in his capacity as a member of the medical community of his county of practice. The basic questions asked in this chapter about the individual physician are two:

(1) how deeply integrated is each physician in the community of his local colleagues? how thoroughly is he "plugged into" the communication network that his local colleagues constitute? and

(2) how, if at all, is this degree of his integration, this degree of being plugged in, related to his knowledge level?

This line of analysis will lay the groundwork for combining, in the next and final chapter, the structural focus of Chapter V and the membership focus of the present chapter.

The final chapter will ask whether, perhaps, the degree of one's integration in the local medical community makes more of a difference to one's knowledge levels in one kind of community than in another; whether, in other words, there are structural characteristics of medical communities which will effect the extent to which being 'plugged in' pays off in improved knowledge levels.

In the present chapter, six different measures will be used for describing the integration of individual physicians in their local community of colleagues. The first three make explicit reference to the advisorship system which is the overall focus of our study, and thus are analogs, on the individual level, to the structural-level concepts of "Ease of access to advisors" and "degree of utilization of advisors" which were introduced in the preceding chapter. Two further measures also refer to colleague relationships in a professional context, although not explicitly defined as the exchange of advice: office sharing, and being named as a discussion partner. A sixth and last measure of integration in the local medical community is the Index of Medical Sociability, first introduced on p. V-5 and in Table V-1; this refers to colleague relationships in extra-professional contexts.

Each of these six measures of integration in the local medical community will now be taken up in turn. The measure will be described, its overall distribution shown, and its gross relationship to average knowledge levels displayed. Next, the precise contextual-level analog of each measure of individual integration will be introduced, in order to see, for example, whether sharing an office perhaps has a different bearing on one's information level in a community where almost everyone has an office partner than in a community where most physicians practice solo. Finally, this analysis will be replicated separately for each of the age-specialization types which were first introduced in Chapter III and used throughout the subsequent chapters.

B. FINDINGS

1. Saliency of Colleagues as an Information Source

As a first indicator of the extent of being "plugged in" to the communication network of local colleagues, we use the readiness with which a colleague comes to mind as a source of information about recent developments in medicine.

Interviewed physicians were asked

> Q. 21 A--Suppose you had a question about recent developments in the management of hypertension, where would you go for an answer?

Some time later they were asked, similarly,

> Q. 28 A--Suppose you had a question about recent developments in the use of steroids, where would you go for an answer in that case?

If a colleague was mentioned by name or otherwise, in the first answer to either question--before any of the interviewer's subsequent prompting about "asking another doctor" (Q. 22 and 2), colleagues were considered "salient" as sources of information for the interviewed physician. This proved to be the case for practically one half (49%) of the 331 physicians interviewed.[1]

This saliency proved to be quite unrelated to information levels. Physicians attained almost identical average Grand Scores, no matter whether colleagues were salient for them or not, and also, no matter whether colleagues were salient for many of the physicians in their county of practice or for few (Table 1, upper portion). When the situation is examined separately for each of the four age-specialization types (Table 1, lower portion), occasional differences do appear, but their pattern is quite erratic and no signifance can be ascribed to it.

[1] i.e., not counting the 83 physicians interviewed in the Medical School County, for reasons pointed out on p. IV-5.

2. Ease of Access to Hypertension and Steroid Advisors

In Chapter V, it will be recalled, ease of access to one's chosen general advisor (i.e., the one named in answer to Q. 11) was indicated by whether the general advisor named was also mentioned as one of the "three physicians with whom you most often find yourself talking shop in the course of an ordinary week" (Q. 70). In the present chapter, ease of access to one's designated hypertension and steroid advisors will be considered

It will be recalled that allinterviewed physicians,instead. even those for whom colleagues were not "salient" in the sense described in the preceding section, were asked by the interviewer to name the colleague whom they "would be most likely to ask"...if /_you_/ wanted to ask another doctor about recent developments in the management of hypertension"(Q. 22 A) and "in the use of steroids" (Q. 29A). A subsequent question (Q. 23 D ahd 30 D) asked whether the colleague designated was "someone you talk shop with in the ordinary week." If a physician answered "yes" to this last question, in connection with hypertension, with steroids, or both, he was regarded as having easy access to his specialty advisor.

This was the case for about three quarters (73% of the 331 physicians. Once again, the average information score of those with easy access was almost indistinguishable from that of those presumably lacking this easy access. The same was true when a comparison was made between the counties where three-quarters or more claimed such easy access, and the remaining counties (Table 2, top portion).

The picture proves, however, more differentiated when the four age-specialization types are considered separately (Table 2, bottom portion). It seems, then, that the older physicians tend to have somewhat higher information scores if they have easy access to their specialty advisors, while, curiously, the opposite is true for the younger physicians; at least it appears so in those counties where such ease of access is especially prevalent.

How is such a curious result at be explained? One is prepared for a finding of no relationship, indicating that ease of access does not help, but hardly for a negative finding suggesting that ease of access actually deleterious to information scores, while difficulty of access is advantageous. Least of all would one expect this to be peculiarly so for the younger physicians whom one may expect to be more positively oriented toward the garnering of recent medical knowledge.

The most likely explanation of this negative finding is that what is advantageous to the knowledge levels of these physicians is not the difficulty of access to their advisors, but rather their having chosen as advisors more expert physicians, to whom access is not so easily obtained. If this interpretation is correct, the crucial difference between the younger physicians classified in Table 2 as having and not having easy access to their specialty advisors is not that one groups sees their advisors frequently, and another sees equally qualified advisors only sporadically. It is rather that one group has less expert advisors who, although they can be seen more frequently, do not have so much to teach those physicians who are themselves in the younger age-group and have had the benefits of a more recent and up-to-date training. The apparently contrasting figures for the older physicians (bottom two tiers of Table 2) are in line with this interpretation: for these older physicians contact with colleagues is valuable even if these colleagues are not experts, and in their instance the frequency of contact does play its expected role.

The fact that the effect in both these directions shows itself almost exclusively in those counties where the average frequency of contact with specialty advisors is high (left side of Table 2) encourages the belief that a snowball process is operating.

3. Utilization of Colleagues for Advice on Hypertension and Steroids

Chapter V used as a relatively crude indicator of the degree of utilization of advisors in each county the proportion of interviewed physicians who had actually responded with the name of a colleague to the general-advisorship question (Q. 11, cited on p. V-15 above). Here we shall once again use the responses given in the more specific context of information about recent developments in the management of hypertension and the use of steroids. This makes it possible to use interviewed physicians' statements which seem more directly reflective of their degree of utilization of colleagues for advice on these subjects. The series of questions about colleagues to whom one would turn for information about these matters concluded with:

> Q. 24 a-- Have you actually had any occasion to go
> to any of your colleagues with questions about
> hypertension in the past 12 months?
> (IF YES:) b--About how many times in the last
> 12 months?

and a similar question (Q. 31) concerning the use of steroids.

The frequencies of this kind of advice-seeking to which the interviewed physicians admitted are quite small. Almost 60% of the physicians denied that they had gone to a colleague even once in the past 12 months with questions concerning steroids, and almost as many denied it concerning hypertension. Only one-sixth reported four or more such inquiries concerning steroids, and under one-fourth did so concerning hypertension (Table 3). Those who report having made such inquiries have the higher information scores (Grand Scores) in each case, although there is a slight curvilinearity: highest average Grand Scores are achieved by those who report from one to three such inquiries in the past 12 months (Table 3).[1]

For further analysis, responses concerning hypertension and steroids are combined and dichotomized, so that physicians are simply classified as reporting at least one such inquiry in either domain, or none at all (Table 4). The difference in average Grand Scores between these two categories of physicians is fairly strong (50.6 for those who do report having made inquiries, and 45.7 for those who deny it). The difference prevails both in the counties where most physicians report such inquiries and in those where at most 61% do. At the same time, the difference between the average Grand Scores of these two sets of counties is even greater, and that quite independently of whether or not the individual physician himself reports such inquiries (Table 4, top part). This suggests that either the actual community-wide practice of making such inquiries of one another, or at least the community-wide climate of approval of this practice (which expresses itself in the more frequent affirmation of having followed it), is conductive to effective keeping-up habits, and that even among the local physicians who themselves do not report having made such inquiries.

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[1] i.e., Forty per cent denied having looked something up in the literature in the past 12 months, for both hypertension and steroids.

Before these conclusions can be accepted, they should be subjected to control by the age-specialization typology. When this is carried out (Table 4, bottom part), the findings are confirmed, although attenuated in magnitude. In each of the four age-specialization types, those who made inquiries achieve higher scores than those who did not, and that both in counties where such reports of inquiries prevail as in those where they are rare. At the same time, the contrast between these two sets of counties persists in all age-specialization types.

4. Office Sharing

We turn now from indicators of integration which make explicit reference to the advisorship system to indicators of integration in professional contexts which do not make reference to the exchange of advice. The first of these indicators is the sharing of an office with other physicians.

We already know (from p. V-13 and Table V-9) that average information levels are the higher, the greater the proportion of office sharers in a county. It remains to be seen whether a similar correlation prevails on an individual level --i.e., whether office sharers have higher scores than solo practitioners--and whether, perhaps, this fact accounts for the finding at the county level.

Physicians were hence classified into office sharers and solo practitioners, and the former were indeed found to achieve higher scores than the solo practitioners by a fairly large margin (52.4 vs. 46.9) (Table 5, top part). This is so no matter how prevalent or rare shared offices may be in the county. The latter factor--the prevalence of office partnerships in the county--still does make a difference to the information scores, even among office sharers and among solo practitioners considered separately, but this difference is not so large.

When the age-specialization typology is introduced as a control (Table 5, lower part), the contextual effect of the prevalence of office sharing in the county regains some of its strength, while the individual effect becomes more attenuated. The individual effect is, as a matter of fact, reversed in three of the instances. This suggests that the office sharers' manifest superiority in information scores is largely, but not exclusively, due to the fact that the younger and more specialized physicians make up a disproportionate share of the office sharers. (See base figures in parentheses in the right column of Table 5: over half of the board diplomates and young specialists, but under one-sixth of the older general practitioners have office partners). Only some portion of the office sharers superior scores can be attributed to possible effects of office sharing.

The contextual effect, by contrast, is, if anything, more clearly apparent after the age-specialization typology is controlled than before; and it continues present in virtually all possible paired comparisons. This suggests that there is a consistently more favorable learning climate in counties containing many office partnerships--a climate that affects the local solo practitioners as well as the office partners themselves. It cannot be stated with certainty that this climate is a result of office sharing; it may simply accompany office sharing because both are promoted by some other common cause; or it may result from office sharing--perhaps through process of competition (solo practitioners are stimulated to make up through their information-gathering practices what office partners get through interchanges in the office) or through a percolation of information from office sharers to non-sharers.

5. Discussion Partnership

A second measure of integration which does not make explicit reference to the exchange of advice, although it does refer to contacts in a professional context, is based on the replies to the question,

> Q. 70--...who are the three physicians with whom you most often find yourself talking shop in the course of an ordinary week?

Table 6 classifies the interviewed physicians into those who were named as such "discussion partners" by at least one of their local colleagues, and those who were not so named at all. Over one-half (53%) of the 331 physicians were named as discussion partners at least once, and their average Grand Score is markedly higher (52.2 vs. 44.8) than that of those who were not named. This difference in information levels seems to prevail equally in those counties where most physicians received discussion partnership nominations, as in those counties where only few did (Table 6, top portion). At the same time, physicians in the former counties achieved higher scores than those in the latter counties, no matter whether they themselves had been named as discussion partners or not.

These differentials between those named and not named as discussion partners prove to depend to a large degree on the disproportionate frequency with which the more highly trained and the more recently trained physicians were named as discussion partners. Within each of the four age-specialization types, those named as discussion partners still achieve higher information levels than those not so named, but by a more modest margin (Table 6, bottom portion, right column).

Even this margin gives way to an inconsistent pattern when it is examined separately in the counties where many were chosen as discussion partners, and those where few were (Table 6, bottom portion, first and second column).

The difference in information scores between these two county types, on the other hand, stands up rather well under all these controls. Information scores are higher in those counties where discussion partnerships are more widely distributed among the physicians; and this seems to benefit even those physicians in these counties who are not themselves nominated as frequent discussion partners.

6. Medical Sociability

This last measure of a physician's integration in the social structure of his medical community refers, at least explicity, to relationships among colleagues outside of the professional context. The Index of Medical Scoiability, based on doctors' reports of their spare-time contacts with other doctors, was first introduced on p. V-5 and in Table V-1, and was used in the description of advisorship pairs on p. V-14. Treated in its own right as a measure of a physician's individual integration in the community of his colleagues, it shows a reasonably high relationship to Grand Scores (50.4 vs. 46.7). Counties where high sociability indexes prevail also are inhabited by more knowledgeable physicians than counties where sociability is less frequent.

Both the individual effect and the aggregate effect hold when the other is held constant (Table 7, top portion).

Once again, however, the individual effect proves to be largely an accompaniment of the higher sociability of the younger physicians, while the aggregate effect persists even within categories of age and specialization (Table 7, bottom portion).

Why should this aggregate effect hold almost uniformly for all age-specialization types, and for discussion partners and non-partners alike, in the face of the weak performance of the individual effect. The relationship may hold for some physicians, especially the older ones simply because greater sociability does benefit their information levels; and hold for others in particular for the younger physicians, because it is where the younger physicians are most knowledgeable that sociability will be cultivated--by their older colleagues. This is, of course, speculative, but in line with the observed pattern.

C. INTERPRETATION

The above run-through of the relationships shown in Tables 1-7 focussed on one indicator of integration at a time. It therefore pointed out the trees at the expense of the forest.

It is necessary to subject these relationship to a re-examination from a more encompassing point of view in order to see what pattern, if any, emerges. Doing so, as will be seen in a moment, gives great strength to the argument for the effectiveness of a community-wide learning climate which is rooted in the locally prevailing degree of intensity of the colleague-to-colleague network. But this very fact also, paradoxically, makes for a very thin yield of measures by which to gauge the county-to-county differences in the effectiveness of the networks. It will be recalled that the development of such measures was one of the goals for which the analysis in this chapter was undertaken.

1. Age and Specialization

One fact stands out so consistently, that attention must be called to it at this point, although it is not immediately relevant to the integration and network question. The Age-Specialization Typology performs with extraordinary consistency throughout this examinatkon. In every one of the 12 differently formed subgroups in which the knowledge levels of the four age-specialization types can be compared, they produce distinct differences, and invariably rank in this order: board diplomates and young specialists; younger general practitioners; older specialists and middle-aged G. P. s; and older general practitioners.

The effect of this factor, first described in Chapter III, is so strong and persistent that it is difficult, against its background, to discern the more subtle effects of other mechanisms.

2. Saliency of Colleagues as an information source

Of the six indicators for a physician's integration in the community of his colleagues, one proved to be unrelated to information scores in any way, no matter what qualifying variables were adduced: and that is the measure called saliency of colleagues as an information source. This measure is based on the interviewed physician's first spontaneous response to two questions of the form "Where would you go for an answer?" (cf. p. VI - 4 above), and scores him high on saliency if this first reply referred to a colleague. The natural and most frequent alternative to this reply is a reference to either the professional literature or to a medical library. Perhaps these two responses bespeak more a ready recourse to the medical literature than a lack of recourse to the colleague network.

3. Ease of access to hypertension and steroid advisors

A second putative measure of a physician's integration in the colleague network was termed ease of access to hypertension and steroid advisors. Its relationship to knowledge levels was at first sight obscured, and, interestingly, revealed itself only after the physicians were divided according to the age-specialization typology. The reason this was so is itself instructive: the relationship was a positive one among the older physicians (those with 'easy access achieved higher scores), and a negative one among the younger physicians, so that it had a cancelled out when these groups of physicians were lumped together.

On reflection this was tentatively explained by assuming that having as hypertension or steroid advisor someone you talk shop with in the ordinary week is as much a reflection of the nature of the man chosen as advisor, as of the intensity of the contact with him. If this interpretation is accepted, the findings confirm the value of such contacts--provided that they are with the "right" advisor, and that means a somewhat different person for older and younger practitioners.

Equally illuminating, however, is the fact that this entire pattern shows itself only in those counties where ease of access' is relatively prevalent; in the hard-access counties there seems to be no relationship at all between ease of access' and information scores. This, as will be seen, is only the first of several indications of the power of the social context or communication climate.

4. Parallel patterns in the four remaining indicators

The four remaining indicators of the degree to which a physician is plugged in to the network of his local colleagues behave very similarly to one another in relation to the information scores. These are the indicators termed utilization of colleagues for advice on hypertension and steroids, office sharing, discussion partnership, and medical sociability. Three kinds of facts can be pointed out about each of these indicators.

a. Gross relationships - When relatively gross relationships are examined (top portions of Tables 4, 5, 6 and 7), there is at least a fairly marked superiority in average Grand Scores on the part of the more integrated physicians as well as on the part of the counties in which integration is more prevalent. Moreover, each of these two forms of superiority, which we term the individual and the contextual effect of integration, respectively, persists when the other is held constant. This is true for each of the four indicators now under consideration.

b. Contextual effects - When the age-specialization typology is introduced as a control (bottom portion of Tables 4, 5, 6, and 7), the contextual effect of integration persists almost without exception (there is ony one reversal among the 32 paired comparisons), although it is often attenuated (raised in one instance). This, also, is true for each of the four indicators now being considered.

This evidence must be added to what was suggested about the power of the social context in the earlier discussion of a fifth indicator, ease of access, under Item 3 of this summary.

These are strong arguments for the importance, to information levels, of a community-wide climate. An active and pervasive communication network among the physicians seem to have a favorable influence on keeping-up. This effect extends over and above any effect that each individual's participation in the network may have on his own keeping up; it extends to the less plugged-in physicians as well as to the more integrated ones. In fact, the argument for the importance of this climate effect is strengthened by a comparison with the fate, in regard to each of the four indicators of integration, of the corresponding individual effect: (the individual effects show up rather poorly when full controls are applied in Tables 4-7, a fact which will be taken up in its own right in the next section).

While it is patent that an active and pervasive communication network among the local physicians makes a difference to keeping-up, the exact nature of the workings of this climate effect cannot be stated. Various possibilities, which may work alone or in combination, were suggested here and there in the above text: a community-wide climate of approval for utilizing the colleague network; competition and stimulation between those well and not so well situated in the communication network; percolation of knowledge from the more to the less well integrated; the common fostering of colleague-to-colleague communications and other good keeping-up habits through yet other causes; and even the inverse causality --sociability being cultivated *because* the presence of well-informed colleagues makes it more worthwhile.

c. *Individual Effects* - It is now necessary to examine the fate of the so-called individual effect of integration, as measured by each of the four indicators used in Tables 4, 5, 6, and 7.

When, in these four tables, the corresponding aggregate effect as well as the age-specialization typology are controlled, the presumed individual effect proves itself only in Table 4, which refers to the Utilization of Colleagues for advice on hypertension or steroids. In the case of office sharing (Table 5), several reversals seem to occur, and in the case of the two remaining indicators of integration the effect gives way to an unsystematic pattern of minor differences (Tables 6 and 7). Thus while in this respect the four indicators cannot be said to perform alike, it must be admitted that the evidence for the operation of the individual effect of integration is dubious.

This itself is a remarkable fact, not only because of the simultaneous persistence of the aggregate effect of the same indicators, which has already been discussed, but also because even the individual effect is shown spurious only when all controls are applied simultaneously. A glance down the right-hand column of the bottom portions of Tables 4,5,6, and 7 shows, with only three exceptions (out of 16 possible ones) that the more integrated physicians achieve higher scores than the less integrated ones, even *within each of the four age-specialization types.* It is only when aggregate integration (at the county level) is held constant in addition to the age-specialization type, that the individual effect gives way. What does this mean?

How can such a pattern come about? How, for example, is it possible (Table 6) that among older specialists and middleaged general practitioners in all counties combined, the discussion partners have a distinctly higher average score than those not named (47.1 vs. 45.0), while no such difference can be found in the counties with few discussants, and only a reduced difference in the counties with many discussants?

This is only possible if among the discussion partners, there is a disproportionate tendency for those with high scores to practice in counties with few discussants, while among the non-partners there is a tendency for high scorers to reside in counties with many discussants.

Some such differential tendency must be generally prevalent in order to produce the results shown in Tables 5, 6, and 7. It is as though to exaggerate for the moment for the sake of clarity in integrated counties, the isolated physicians were better informed; while in counties with a less tightly knit medical communication network, the integrated physicians were better informed. The exaggeration in this sentence is a very gross one, for in fact no such pattern is found in the tables. It is precisely our failure to find a consistent pattern of individual effects of integration that led to the present re-examination. Nevertheless, some degree of the tendency described exists--sufficient to make it possible for the integrated physicians not to be consistently superior in information scores to the less integrated physicians either in the counties with pervasive networks, nor in the counties with looser networks, although they do show this superiority when all counties are combined.

The more intensive networks either do not give the well-integrated physician as much of an advantage in keeping up, or else do not facilitate it so much for the well-informed physician to become integrated, as the looser networks do. Why this should be so must, for the present, remain a matter for speculation.

At any rate, only one indicator of integration -- utilization of colleagues for advice on hypertension or steroids --shows a consistent relationship between the *individual's* integration and his knowledge levels when other factors are controlled. Almost all the indicators give evidence of a consistent effect of integration on the *aggregate* level. A close knit network of communication among the doctors in the county accompanies higher knowledge scores among the more as well as among the less integrated, among the old and the young, among the specialists and among the general practitioners.

Table VI - 1

Average Grand Score by Saliency of Colleagues as an Information Source

Physicians for whom colleagues were:-	High saliency counties[a]	Low saliency counties[b]	All counties combined
ALL AGE-SPECIALIZATION TYPES			
Salient	48.7 (49)	49.3 (112)	49.1 (161)
Not salient	48.5 (82)	48.2 (88)	48.4 (170)
Both combined	48.6 (131)	48.8 (200)	
BOARD DIPLOMATES AND YOUNG SPECIALISTS			
Salient	62.8 (5)	59.8 (29)	60.2 (34)
Not Salient	65.4 (7)	60.3 (8)	62.7 (15)
YOUNGER GENERAL PRACTITIONERS			
Salient	57.0 (14)	51.5 (28)	53.4 (42)
Not Salient	53.2 (32)	54.9 (27)	54.0 (59)
OLDER SPECIALISTS AND MIDDLE-AGED G.P.'S			
Salient	47.1 (15)	47.5 (30)	47.4 (45)
Not Salient	45.5 (25)	44.8 (32)	46.1 (57)
OLDER GENERAL PRACTITIONERS			
Salient	37.9 (15)	36.8 (25)	37.2 (40)
Not salient	37.9 (18)	40.2 (21)	39.2 (39)

[a] Colleagues salient with 57-75% of interviewed physicians.
[b] Colleagues salient with 26-56% of interviewed physicians.

Table VI - 2

Average Grand Score by Ease of Access to Hypertension and Steroid Advisor

Physicians for whom access to hypertension or steroid advisor is:-	Easy-access[a] counties	Hard-access[b] counties	All counties combined
	ALL AGE-SPECIALIZATION TYPES		
Easy[c]	49.3 (112)	48.5 (128)	48.9 (240)
Not easy[d]	50.6 (24)	47.6 (67)	48.4 (91)
Both combined	49.6 (136)	48.2 (195)	
	BOARD DIPLOMATES AND YOUNG SPECIALISTS		
Easy	62.3 (18)	56.7 (16)	59.6 (34)
Not easy	65.7 (7)	62.4 (8)	63.9 (15)
	YOUNGER GENERAL PRACTITIONERS		
Easy	52.9 (32)	53.9 (47)	53.5 (79)
Not easy	60.7 (4)	53.2 (18)	54.6 (22)
	OLDER SPECIALISTS AND MIDDLE-AGED G.P.'S		
Easy	46.8 (29)	46.2 (41)	46.5 (70)
Not easy	43.3 (8)	46.0 (24)	45.3 (32)
	OLDER GENERAL PRACTITIONERS		
Easy	41.1 (33)	36.1 (24)	39.0 (57)
Not easy	33.2 (5)	36.8 (17)	36.0 (22)

a Access easy for 75-87% of interviewed physicians.

b Access easy for 33-74% of interviewed physicians.

c Hypertension or steroid advisor is someone talked shop with in ordinary week.

d Neither hypertension nor steroid advisor talked shop with in ordinary week.

Table VI - 3

Average Grand Score by Individual Utilization of Colleagues for Advice on Steroids and on Hypertension

	Questions about Steroids			Questions about Hypertension		
	Asking pyhsicians		Average Grand Score	Asking physicians		Average Grand Score
	Number	Per cent		Number	Per cent	
How often asked in year:						
never	192	58	47.2	183	55	46.8
1-3 times	87	26	51.3	73	22	52.7
4 or more times	52	16	50.3	75	23	49.5

Table VI - 4

Average Grand Score by Utilization of Colleagues for Advice on Hypertension or Steroids (Combined)

Number of inquiries made on either subject last year:-	High utilization[a] counties	Low utilization[b] counties	All counties combined
ALL AGE-SPECIALIZATION TYPES			
one or more	52.6 (102)	48.6 (105)	50.6 (207)
none	50.4 (31)	44.3 (93)	45.7 (124)
both combined	52.1 (133)	46.5 (198)	
BOARD DIPLOMATES AND YOUNG SPECIALISTS			
one or more	62.2 (17)	60.7 (15)	61.5 (32)
none	60.1 (7)	59.8 (10)	59.9 (17)
YOUNGER GENERAL PRACTITIONERS			
one or more	55.1 (37)	53.6 (30)	54.4 (67)
none	54.3 (8)	51.8 (26)	52.4 (34)
OLDER SPECIALISTS AND MIDDLE-AGED G.P.'S			
one or more	49.1 (31)	46.5 (37)	47.6 (68)
none	45.0 (10)	42.2 (24)	43.0 (34)
OLDER GENERAL PRACTITIONERS			
one or more	44.4 (17)	37.7 (23)	40.6 (40)
none	42.8 (6)	34.4 (33)	35.7 (39)

a Inquiries reported by 62-87% of interviewed physicians.
b Inquiries reported by 31-61% of interviewed physicians.

Table VI - 5
Average Grand Score by Office Sharing

Physicians whose office is:-	High partnership[a] counties	Low partnership[b] counties	All counties combined
ALL AGE-SPECIALIZATION TYPES			
shared	53.2 (73)	50.8 (39)	52.4 (112)
solo	47.2 (45)	46.8 (174)	46.9 (219)
both combined	50.9 (118)	47.5 (213)	
BOARD DIPLOMATES AND YOUNG SPECIALISTS			
shared	63.5 (15)	60.7 (11)	62.3 (26)
solo	66.5 (2)	58.8 (21)	59.4 (23)
YOUNGER GENERAL PRACTITIONERS			
shared	55.9 (26)	49.9 (14)	53.8 (40)
solo	53.5 (10)	53.7 (51)	53.7 (61)
OLDER SPECIALISTS AND MIDDLE-AGED G.P.'S			
shared	49.2 (24)	46.6 (10)	48.4 (34)
solo	47.7 (14)	44.2 (54)	44.9 (68)
OLDER GENERAL PRACTITIONERS			
shared	37.1 (8)	37.8 (4)	37.3 (12)
solo	41.4 (19)	37.1 (48)	38.3 (67)

a 50-85% of interviewed physicians have office partners.

b 0-26% of interviewed physicians have office partners.

Table VI - 6

Average Grand Score by Discussion Partnership

Nominations received as discussion partner:	Counties with many discussants[a]	Counties with few discussants[b]	All counties combined
ALL AGE-SPECIALIZATION TYPES			
some	53.1 (111)	50.6 (65)	52.2 (176)
none	48.2 (61)	42.6 (94)	44.8 (155)
both combined	51.4 (172)	45.9 (159)	
BOARD DIPLOMATES AND YOUNG SPECIALISTS			
some	61.6 (24)	60.7 (23)	61.2 (47)
none	-	56.0 (2)	56.0 (2)
YOUNGER GENERAL PRACTITIONERS			
some	55.7 (38)	50.3 (15)	54.2 (53)
none	54.8 (19)	52.2 (29)	53.2 (48)
OLDER SPECIALISTS AND MIDDLE-AGED G.P.'S			
some	48.9 (36)	43.2 (16)	47.1 (52)
none	47.0 (23)	43.4 (27)	45.0 (50)
OLDER GENERAL PRACTITIONERS			
some	41.2 (13)	40.9 (11)	41.1 (24)
none	43.1 (19)	35.0 (36)	36.9 (55)

[a] 50-80% of interviewed physicians received discussion nominations.
[b] 33-49% of interviewed physicians received discussion nominations.

Table VI - 7

Average Grand Score

by Medical Sociability

Physicians whose Medical Sociability Index is:-	High sociability[a] counties	Low sociability[b] counties	All counties combined
	ALL AGE-SPECIALIZATION TYPES		
high	52.1 (106)	47.8 (68)	50.4 (174)
low	47.9 (61)	45.9 (89)	46.7 (150)
both combined	50.6 (167)	46.7 (157)	
	BOARD DIPLOMATES AND YOUNG SPECIALISTS		
high	60.9 (33)	57.3 (4)	60.5 (37)
low	72.7 (3)	57.1 (7)	61.8 (10)
	YOUNGER GENERAL PRACTITIONERS		
high	52.5 (31)	53.7 (29)	53.1 (60)
low	55.4 (14)	53.6 (25)	54.3 (39)
	OLDER SPECIALISTS AND MIDDLE-AGED G.P.'S		
high	47.2 (23)	46.6 (20)	46.9 (43)
low	48.3 (24)	44.1 (34)	45.7 (58)
	OLDER GENERAL PRACTITIONERS		
high	41.8 (19)	35.3 (15)	39.0 (34)
low	38.6 (20)	36.9 (23)	37.7 (43)

a 62-67% of interviewed physicians measure "high" on the medical sociability index.

b 23-61% measure "high".

Chapter VII

THE RELATION OF INTEGRATION TO KNOWLEDGE UNDER ADVISORSHIP SYSTEMS OF DIFFERENT STRUCTURE

A. INTRODUCTION

The relationships between a physician's knowledge score and the various indicators of his integration in the local medical network, which were displayed and analyzed in Chapter VI, have different magnitudes in the several counties. It is the task of this last chapter to try to account for this variation by means of the structural characteristics of the advisorship systems of the different counties, presented and discussed in Chapter V.

The purpose as well as the evidential status of this analysis has shifted somewhat since the research design was formulated, because of the evidence of Chapter VI.

It was intended that this analysis would make it possible to say what kind of an advisorship structure was most effective in maintaining high information levels. The anticipated correlations between knowledge levels and the several indicators of a physician's integration in his local medical community, it was thought, would serve as measures of the effectiveness of the local advisorship structure. The reasoning behind this was simply that an advisorship system which is effective in maintaining high knowledge levels would result in higher knowledge levels among those local physicians who were plugged into the system than among those who were not;

while an ineffective advisorship system would leave the information levels of the integrated physicians not much above those of their less integrated colleagues.

This reasoning assumes, of course, that a correlation between integration and knowledge levels measures the causation of higher knowledge levels by integration. The well-known possibilities of common causation by third factors, and of inverse causality (higher knowledge levels bringing about greater integration) make it necessary to be cautious in making this assumption. It would, in our opinion, nevetheless have been a warranted assumption if correlations had consistently prevailed between knowledge levels and most of the indicators of integration, and if these correlations had held up well when the most likely confounding factors were controlled. Chapter VI has, however, shown that this is the case for only one indicator of a physician's integration in his local professional community, the utilization of colleagues for advice on hypertension and steroids. This throws grave doubt on the possibility of determining the effectiveness of advisorship systems in this manner, and for such correlations between integration and knowledge levels as are found, it leaves their validity as showing a causation of higher knowledge levels by integration moot. (We nevertheless occasionally refer to such correlations in the text to follow as "integration effectiveness measures;" the uncertainty of this attribution must be kept in mind.)

It was nevertheless decided to carry through the planned analysis of the data, in order to see what might be learned in this way. Perhaps some of the near-zero correlations between integration and knowledge levels which resulted in Chapter VI from the application of certain statistical controls would prove to be consequences of the masking of relationships by yet other specifying factors, or of compensating positive and negative relationships in the several counties. This does indeed seem to be the case to a large extent, as will be seen below; and the varying relationships do form a pattern that is interpretable in terms of the varying advisorship structures. These interpretations, to be sure, are "special" and ex-post-facto, and have the status of suggestions founded on the findings rather than of demonstrated causal connections.

In sum, the meaning of the analysis of the present chapter has shifted from that originally envisaged in two important ways: rather than speaking of characteristics which make advisorship structures more or less effective, we shall speak of characteristics which make one way or another of "plugging into" the local network more appropriate; and these relationships, rather than being demonstrated or corroborated by the data, will have been suggested by them.

B. County-by-county variation of correlations between information scores and integration in the social structure

The analysis in the remainder of this chapter will be based on a somewhat complicated statistical procedure, which will be explained step by step. Each county will first be described by a series of measures, which themselves are correlations of certain measures among the physicians practicing in the county; and these correlations will then enter into correlations with other characteristics of the 14 counties.

The primary correlations describing the counties will relate the Grand Score of each physician interviewed in the county to one or another of the indicators of his integration in the local medical community which were introduced in Chapter VI. This correlation will be measured by the correlation ratio, commonly called "eta," which is an appropriate device for correlating an interval variable (Grand Score) with a nominal variable (indicator of integration, dichotomized). (The square of this measure was used in Chapter III, Table 9, and pp. 5-6). Thus, for example, the relationship between the Grand Score of each physician and his ease of access to his hypertension or steroid advisor (cf. Table VI - 2) yields an eta of-.103 in Stone County, one of .022 in View County, one of .081 in Pro County, and so on. Table 1 shows these etas for all 14 counties,and for each of five indicators of a physician's integration in his local professional community. Counties are ordered as they were in the tables of Chapter V, i.e., in descending order of Adjusted Grand Scores.

In addition to these correlation measures, a corresponding partial correlation ratio, termed beta, is also shown for each county and each indicator of integration. It shows the relationship between the Grand Score of each physician and his integration (as measured by each indicator in turn), while controlling for the effects of the Age-Specialization Typology. [1]

It is these beta measures which enter as a basic element into the remainder of the analysis reported in this chapter.

[1] See note, p. III-6 concerning these measures.

C. Characteristics of the Advisorship Structure Reconsidered

As a next step, it is necesaary to re-examine the intercorrelations among the characteristics of the advisorship structure of each county, which were introduced in Chapter V. The intercorrelations between these characteristics were already presented in Table V-12 and were briefly mentioned on p. V-15. They are reproduced in Table 3 of the present chapter, but in a different order. It will be recalled that these are Pearsonian correlations, over the 14 counties (N=14), of the rates and indexes developed for each county in Chapter V.

An examination of these intercorrelations reveals two quite distinct sets of structural characteristics, while a number of additional characteristics cannot be placed with certainty. The first three characteristics listed in Table 3 -- advice specialization, advice dispersion, and per cent office sharers--are positively related to one another, as can be seen in the upper left corner of the table. The last three characteristics listed--Discussion consensus, per cent of advice pairs which are also discussion pairs, and advisors' information levels--are also positively related to one another, as can be seen in the lower right corner of the table. Characteristics in the first set are negatively correlated with the characteristics in the second set, as can be seen in the upper right corner of Table 3. As will be seen, these two sets of structural characteristics also relate in two quite different ways to the putative measures of the importance of integration to knowledge levels.

The three structural characteristics listed in the middle of Table 3--Per cent naming an advisor, medical sociability of advice pair members, and advisorship homophily in discussion pairs--cannot be so unambiguously placed in terms of their intercorrelations with the other structural characteristics. Their relationship to the measures of the effectiveness of integration will also have to be examined separately.

D. Indicators of Integration Reconsidered

Having examined the intercorrelations among the structural characteristics of medical communities, which are to form the independent variables of the analysis, we proceed to examine intercorrelations among the intended dependent variables. These dependent variables are, of course, the within-county partial correlation ratioes (beta's) between knowledge levels and the several indicators of a physicians' integration in the local medical community. They are the measures which were listed for each county in Table 2; we will refer to them as integration effectiveness measures.

Table 4 shows the intercorrelations between these measures. The intercorrelations are ordinary Pearsonian correlation coefficients, computed for 14 cases (counties); the variables being correlated are themselves association measures.

Clearly, strong positive correlationships relate the effectiveness of the first three indicators listed in Table 4: saliency of colleagues as an information source, ease of access to hypertension or steroid advisors, and utilization of colleagues for advice on hypertension or steroids. In counties where one of these is strongly related to information scores, that is, the other two will also be strongly related to information scores.

The last two measures listed in Table 4, however--discussion partnership and medical sociability--behave differently, while being positively (.327) related to one another. The beta for medical sociability is negatively related to the beta's of the first three indicators listed. That is to say, in counties where salience or ease of access are especially strongly related to information scores, medical sociability is least strongly related to information scores In this respect, discussion partnership acts similarly to medical sociability, but to a lesser extent.

E. Relationship of Structural Characteristics to the Effectiveness of Integration on Knowledge Scores

We are at last ready to bring together the several structural characteristics describing the advisorship structure of each county, and the effectiveness measures (beta's) describing for each county the extent to which each indicator of integration is related to information scores (with the age-specialization typology controlled). This is done in Table 5.

This table tells us, for example, that the partial[1] correlation ratio (beta), computed for each county, between knowledge scores and medical sociability forms a correlation, county-by-county, with advice specialization, which is expressed by a Pearsonian coefficient of .309. In other words, the greater the advice specialization of

[1] i.e., controlling for age-specialization typology.

a county, the more important is medical sociability to knowledge scores in that county.

The top three rows of Table 5 show that the three structural characteristics of advice specialization, advice dispersion, and percent office sharers, which were found intercorrelated with each other, (Table 3) have very similar patterns of correlation to the integration effectiveness measures. They form positive correlations with the effectiveness of medical sociability. With the remaining effectiveness measures they form mostly negative correlations, occasionally no correlation at all. That is to say, medical sociability pays off in heightened knowledge (or perhaps heightened knowledge leads selectively to greater medical sociability) chiefly in those counties where different physicians are sought out for advice on different medical subject matters, where advice nominations are widely dispersed over many physicians, and where many physicians share offices with colleagues.

But the same cannot be said of the last three integration indicators shown in Table 5-saliency of colleagues as sources of information, ease of access to hypertension or steroid advisors, and utilization of colleagues for advice on steroids and hypertension. If anything, these three forms of integration are least strongly related to knowledge scores in the kinds of counties just pointed out; i.e., where different physicians are sought out for advice on different subject matters and by different colleagues, and where office partnerships are common. (Discussion partnership will be taken up later.)

A nearly opposite pattern can be seen in the last three rows of Table 5, where the structural characteristics of discussion consensus, per cent of advicc pairs which are also discussion pairs, and advisors information levels play the role of independent variables. These structural characteristics, by contrast to the three just examined, tend to be negatively correlated with the effectiveness of medical sociability, but positively with the effectiveness of colleague's saliency, ease of access to the hypertension or steroid advisors, and the utilization of colleagues for advice on hypertension or steroids.

F. Discussion

How is this pattern of relationships to be interpreted?

Two distinct sets of structural characteristics of counties have emerged so far. The more characteristics in the first set prevail in a given county, the more likely is it that it is the physicians who are most sociable with their colleagues who have the higher knowledge levels, and the less likely is it that high knowledge levels mark those who report apontaneous, easy, and frequent utilization of colleagues as advisors in special subject matters.

The opposite is true of the structural characteristics in the second set. The more they prevail in a given county, the less likely is it that the physician's of high medical sociability are especially well informed, and the more likely is it that high information levels accompany the asking of advice from colleagues on special subject matters.

What is it that the characteristics in the first set have in common, and what is it that the characteristics in the second set have in common, that might account for this contrasting pattern of relationships?

The structural characteristics in the first set are those termed advice specialization, advice dispersion, and per cent office sharers. As explained in greater detail in Chapter V, advice specialization means essentially that different physicians tend to be appealed to for advice on different medical subject matters. Advice dispersion means essentially that choices of advisors are widely distributed over many physicians in the community, rather than being concentrated on a few "stars." The meaning of per cent of physicians who share their office with one or more colleagues is obvious. From a communications-network perspective, all three of these structural characteristics bespeak a diffuse structure. Many different physicians serve as advisors; different physicians are appealed to for advice by different colleagues; different physicians are appealed to for advice on different subject matters; and most of the physicians have access to their "own" advisors in the form of colleagues in their own office. Thus no one, nor any small group of physicians, has a monopoly on advice-giving.

There is little hierarchy and little crystallization of the advice structure. On the contrary, physicians considered appropriate as advisors are encountered in most parts of the medical community and in most settings were physicians meet colleagues.

It is understandable that medical sociability should be most closely associated with knowledge levels in counties which are characterised by an open advisorship structure like that just described. We need not think only of the actual spending of spare time in the company of medical colleagues. Undoubtedly, the Index of Medical Sociability also bespeaks a more general easy and informal give-and-take relationship in contexts whose professional character need not be precisely defined. This kind of easy, unstructured, non-specific integration in the community of one's colleagues would naturally pay off in higher knowledge levels most in those communities were colleagues considered appropriate as advisors are encountered in every medical and non-professional setting and at every hour of the physician's day.

But what of the three last indicators of a physician's integration in the social structure of his colleagues--those which we have termed "saliency of colleagues as information sources," "ease of access to hypertension or steroid advisors," and "utilization of colleagues for advice on steroids and hypertension?" According to Table 5, they are least likely to accompany high knowledge levels in the counties characterised by the open advisorship structure that was described above. It will be recalled that all three of these indicators are based on physicians statements in the context of the question, "if you had a question....where would you go for an answer?" We now suggest that the acts recognized by the interviewed physicians as constituting "going to another physician for an answer to a question" have a relatively formal and hierarchic character, in spite of the interview's emphasis on the informal contact among physicians. Ordinary "shop talk" and casual inquiries of a peer incidental to a conversation would, according to this interpretations, not usually be counted as "going to a colleague for an answer." To count as such, it seems, the inquiry would have to be conceived of as a separate act, a going out of one's way to address a question to a colleague, and an interaction which leaves no doubt as to who asks for information and who dispenses it;

the colleague addressed is acknowledged as one's superior at least on the subject matter in question.

The physicians classified as highly integrated in terms of these responses are then those to whom it comes most naturally to think of addressing questions to someone whom they acknowledge as expert, who can do so easily, and in fact do so most often. Naturally, such habits or preferences are not made more conducive to successful information-gathering by the kind of loosely knit, broadly spread advisorship structure which is apparently indicated by a county's high standing on advice specialization, advice dispersion, and per cent of office sharing.

On the contrary, finding it natural and easy to "set up" one's inquiries in the deliberate, somewhat formal, and somewhat hierarchic manner just described will "pay off" better in those counties whose communication climate favors such appeals, where experts are indeed acknowledged and visible--in other words, where there is a more crystallized, concentrated, and somewhat more hierarchized advisorship structure.

Such a structure, we now recognize in the light of this discussion, is indicated by most of the structural characteristics in the second set. Thus high "Consensus on discussion" means that discussion nominations in the county are concentrated on a relatively few individuals, and is probably reflective of a generally more hierarchic communication structure in which a few physicians stand out as "stars." A high information level among advisors also would seem to indicate advisors who are chosen among the elite.

The import of the above discussion is therefore strengthened by the pattern of relationships shown in the lower portion of Table 5; for this shows that where the structure of the local medical community has this more concentrated character, with the singling out of more elitist and visible advisors, the physicians who most readily turn to experts are especially likely to be the best informed, while sparetime sociability with medical colleagues, and the more diffuse integration which it probably indicates, are less likely to "pay off" in terms of knowledge level, since this is the "wrong way" to go about keeping medically informed in counties of this sort.

Unexplained is the question why the structural characteristic, "per cent of advice pairs which are also discussion pairs" shows the same pattern of relationships in Table 5 as "consensus on discussion" and information level of advisors." The per cent of advice pairs which are also discussion pairs was, in fact, introduced in Chapter V as a likely indicator of ease of access to advisors--hence as a variable that one would expect to behave like those at the top of Table 5 and not like those at the bottom. Possibly the overlap between advice and discussion nominations means not so much that one has an advisor whom one can also have daily shop talk with, as having an advisor with whom one must maintain more casual contact in order to have him available as an advisor.
But this is quite speculative.

In the light of this discussion, we can now turn to the three remaining structural characteristics, listed in the middle of Table 5 (as well as of Table 3). As was seen earlier, it was not possible, on the basis of the intercorrelations among the structural characteristics, to place these three unambiguously with either one or the other set. We may now examine these three characteristics in terms of their content, and see whether we would expect them to fall in line more with the structural characteristics listed at the top of Table 5, which we now see as indicating a diffuse, open advisorship structure, or with those listed at the bottom of Table 5, which we now interpret as indicating a more crystallized structure with particular individuals singled out as the visibly appropriate local advisors.

Seen in this light, "advice homophily in discussion pairs" would seem to belong more with the indicators of a hierarchized structure. It will be recalled from Chapter V that this measure indicates a tendency for advisors to chose other advisors as discussion partners, while those who were not named as advisors would have other non-advisors as discussion partners; crudely put, that advisors only speak to one another. And indeed, the relationships of this measure which are shown in Table 5 are like those of the other indicators of a hierarchic advice structure: it is negatively related to the importance of sociability to information levels, and moderately positively to the importance of the other indicators of integration to information levels.

What of "per cent naming an advisor?" The pattern of correlations shown for this structural characteristic in Table 5 is rather like that of the indicators of a diffuse advisorship structure: a positive, though very modest, association with the importance of sociability to knowledge levels, and negative associations with the importance of the three last-listed indicators of integration to knowledge levels. Thus this admittedly crude measure of the utilization of general advisorship also appears to be a measure of the open spread of the advisorship structure; for the more people are able to name a colleague who is their advisor, the less hierarchized would the structure seem to be.

There remains one structural characteristic, "medical sociability of advice pair members." Most likely, it is simply a reflection of high medical sociability in a given county in general, quite independent of advice-pair membership. If so, one would have expected its pattern of relationship to be like that of the structural characteristics listed at the top of Table 5. In fact, however, its pattern of relationships is not consistently like that of either of the more well defined sets.

We have also not yet commented on one of the indicators of integration,discussion partnership. This refers to whether or not a physician was named by at least one local colleague as one of three physicians with whom he "talks shop in the course of an ordinary week." The pattern of relationships shown in Table 5 for integration effectiveness according to this indicator is rather like that for medical sociability, with the exception of the relationship to the information levels of advisors in the county, which is a positive one.

G. Conclusion

Although the nature of the findings of Chapter VI made it inevitable that the results of the analysis reported in the present chapter would not be as conclusive as the original study design had envisaged, what has been learned suggests an intelligible pattern of relationships between the social structure of medical communities and the importance to information levels of being "plugged in" to the colleague network.

That the social milieu or "climate" of each medical community has an important bearing on keeping-up patterns and information levels within the community is corroborated by a considerable variety of evidence in Chapters IV, VI, and VII. Chapters VI and, in part, VII also tell us something about what it is about the milieu that is relevant here: the nature of the communication links that characterize each community of physicians is a vital attribute.

It has not been possible to answer the question, "what kind of communication pattern is optimally conduci[illegible] to keeping up?" Instead, the data have strongly suggested, b[illegible] without adequately demonstrating, that the true state of affairs is more complex than this question implies. It appears that there are several--at least two--different ways of "plugging into" the local network, and that the learning pay-off of each is maximized by a different kind of community structure. To some extent, physicians absorb information from colleagues in informal give-and-take relationships and in contexts whose professional character is not precisely specified; the knowledge payoff of this kind of integration is greatest when the advisorship structure of the medical community is open, diffuse, and unhierarchized.

On the other hand, physicians learn from colleagues in somewhat more structured settings where a respected colleague is deliberately sought out for his counsel or information. The knowledge payoff from being "plugged into" the structure in this manner, it seems, is greatest in those locales where the communication climate is more crystallized, concentrated, and somewhat more hierarchic.

Table VII - 1

Integration and Knowledge in each County

(Within-County Correlation Ratioes)

County Code Name	Indicator of Integration				
	Saliency of Colleagues as an Information Source	Ease of Access to Hyp. or Steroid Advisor	Utilization of Colleagues for Advice	Discussion Partnership	Medical Sociability
	Correlation Ratio (Eta)				
Stone	.031	-.103	.105	.568	.342
View	.356	.022	.165	.181	-.049
Pro	-.200	.081	.018	.459	.279
Wood	.210	-.325	.188	.227	-.043
Hunts	.341	-.163	.327	.450	.273
Hern	-.282	.205	-.101	.078	.193
Rise	-.219	-.158	.138	.129	.202
West	-.219	-.166	.039	-.251	.547
Fisher	-.647	-.788	-.384	.632	.547
Xim	-.263	.225	.098	.399	.399
Ate	.081	.364	.215	.318	.052
Mine	.104	.132	.232	.344	.068
Olde	.181	-.217	.218	-.206	-.396
Shafts	-.180	.213	.235	.334	-.155

Table VII - 2

Integration and Knowledge in each County
Controlling for Age-Specialization Typology
(Within-County Partial Correlation Ratioes)

	Indicator of Integration				
County Code Name	Saliency of Colleagues as an Information Source	Ease of Access to Hyp. or Steroid Advisor	Utilization of Colleagues for Advice	Discussion Partnership	Medical Sociability
		Partial Correlation Ratio (Beta)			
Stone	-.071	.118	.029	.338	-.186
View	.378	-.037	.127	.186	-.186
Pro	-.089	.141	.126	.256	.056
Wood	.104	-.085	.182	.170	.118
Hunts	.324	-.056	.377	.244	.236
Hern	-.040	-.050	-.033	.231	.062
Rise	-.087	-.192	.200	.049	-.171
West	-.389	-.211	-.129	-.347	.402
Fisher	-.678	-.675	-.575	.632	.669
Xim	.246	.091	.074	-.446	-.126
Ate	-.089	.030	.138	.057	.154
Mine	.075	.042	.061	.182	.041
Olde	.142	-.243	.164	-.337	-.473
Shafts	-.037	.035	.081	.084	-.041

Table VII - 3

Intercorrelations between Characteristics of the Advisorship Structure of Counties

Pearsonian Correlations between County Rates and Indexes

	(2) Adv. Disp.	(3) Ofce. Share	(4) Naming Adv.	(5) Socia-bility	(6) Homo-phily	(7) Disc. Cons.	(8) A-D Pairs	(9) Adv. Info.
1. Advice Specialization	.109	.396	-.068	.301	.029	-.285	-.621	-.069
2. Advice Dispersion		.518	.091	-.323	-.062	-.649	-.408	-.237
3. Per cent Office Sharers			.188	.077	.226	-.407	-.614	-.005
4. Per cent Naming an Advisor				.359	.170	.153	-.222	.486
5. Medical Sociability of Advice Pair Members					-.112	.314	.102	.701
6. Advisorship Homophily in Discussion Pairs						-.343	-.169	-.107
7. Discussion Consensus							.479	.334
8. Per cent of Advice Pairs which are also Discussion Pairs								.285
9. Advisors' Information Levels								--

Table VII - 4

Intercorrelations between the Integration-Knowledge Associations (Beta's)[a] of Counties

Beta of Knowledge with each Indicator of Integration:-	Beta with Ease of Access to Hyp. or Steroid Advisor	Beta with Utilization of Colleagues for Advice	Beta with Discussion Partnership	Beta with Medical Sociability
	Pearsonian Correlations between County Partial Correlation Ratioes (Beta's) of knowledge and Integration			
Beta with Saliency of Colleagues as an Information Source	.623	.830	-.092	-.666
Beta with Ease of Access to Hypertension or Steroid Advisor		.676	-.039	-.503
Beta with Utilization of Colleagues for Advice on Hypertension or Steroids			-.343	-.610
Beta with Discussion Partnership				.327
Beta with Medical Sociability				---

[a] Controlling for the Age-Specialization Typology.

Table VII - 5

Advisorship Structure of Counties and Integration Effectiveness (?)

	Indicator of Integration				
	Medical Sociability	Discussion Partnership	Saliency of Colleagues as an Information Source	Ease of Access to Hyp. or Steroid Advisor	Utilization of Colleagues for Advice on Hyp. or Steroids
Structural Characteristics:	Pearsonian Correlations between Structural Characteristics and the Partial Integration-Knowledge Associations[a] (Beta's) of Counties According to each Indicator of Integration				
Advice Specialization	.309	.085	.060	-.313	.032
Advice Dispersion	.266	.130	-.124	-.537	-.284
Per cent Office Sharers	.317	.163	.165	-.128	.021
Per cent Naming an Advisor	.170	.106	-.368	-.330	-.374
Medical Sociability of Advice-Pair Members	-.004	.330	-.178	.169	-.159
Advisorship Homophily in Discussion Pairs	-.266	-.200	.330	-.085	.142
Discussion Consensus	.100	.079	-.189	.461	.078
Per cent of Advice Pairs which are also Discussion Pairs	-.603	-.065	.217	.584	.377
Advisors' Information Levels	-.320	.300	.111	.386	.057

[a] Controlling for Age-Specialization Typology.

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APPENDICES

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APPENDICES

to

PHYSICIANS' INFORMATION

and

PHYSICIANS' LOCAL ADVISORY SYSTEMS

Appendix A -- Information Test

Appendix B -- Interview Schedule
(other than information test)

Appendix C -- Sampling

August 1969

APPENDIX A

Explanation

The following pages supplement the report by indicating for each of the information items covered in the information-test part of the interview:

1. The content of the information item.
2. The questions actually addressed to physicians during the interview, in order to assess their awareness of the information item.
3. The initial classification of the responses, showing frequency distributions.
4. The manner in which initial classifications were combined into a "raw item score" for each of the items.

   For the frequency distributions of the item scores, the reader is referred to pages A-59 - A-61.

Content

	Medical Area	Page
Section	I - Steroids	A-2
	II - Hypertension	A-16
	III - Infectious Diseases	A-32

APPENDIX A

Section I: STEROIDS

Item No.	Information Items
1	Rebound effect and adrenal insufficiency
2	Instructions to patient
3	Steroid regimen under stress
4	Steroid side effects
5	Effectiveness of ascorbic acid

All items were used in the computation of the area score for steroids.

The frequency distributions for the raw item scores are shown on page A-59.

STEROID -- ITEM 1

INFORMATION ITEM

A course of steroid treatment in rheumatoid arthritis, once begun, cannot be easily terminated, both because of the likelihood of rebound and because of the developing adrenal insufficiency. Gradual tapering off of the treatment reduces the insufficiency problem but not the rebound problem.

INTERVIEW QUESTION

Q. 36 a. Now let us think of a specific situation -- A patient with rheumatoid arthritis who has never received steroid treatment. What should be done to help such a patient over an aggravated state of his arthritis?

IF NO MENTION OF STEROIDS SO FAR:

Q. 37 a. Would steroids be appropriate to help a patient over an acute state of rheumatoid arthritis?

Q. 38 a. Suppose a person were put on steroids for the first time in order to help him over an aggravated state of rheumatoid arthritis. Might there be a problem with taking him off the steroids once the arthritis had subsided?

c. What might happen?

d. Might there be any other problem with taking him off the steroids?

IF GRADUALNESS OF REDUCTION MENTIONED:

e. And if the treatment is tapered off gradually, might there still be a problem? What?

f. What (else) would be the problem if the steroid treatment had to be stopped quickly, let us say in case of sudden infection?

g. Are there any other problems which might occur if the treatment were stopped quickly? What?

STEROID -- ITEM 1

INITIAL CLASSIFICATION OF RESPONSES

	Code	Rebound Effect	Number	Per Cent
Column 11/	1	Mentioned without qualification.	175	42%
	2	Only if the treatment has been long.	18	4
	3	Only if treatment is suddenly terminated.	59	14
	4	If treatment has been long and termination is sudden.	8	2
	5	Not mentioned.	96	23
	0	No problem in taking a patient off Steriods.	43	11
	X	No answer/not asked.	7	2
	Y	Don't know to entire question.	7	2
			413	100%

STEROID -- ITEM 1

INITIAL CLASSIFICATION OF RESPONSES (CONTINUED)

	Code	Adrenal Insufficiency	Number	Per Cent
		Adrenal insufficiency mentioned by name:		
Column 12/	1	Without qualification.	60	15%
	2	Only if treatment has been long.	13	3
	3	Only if treatment is suddenly terminated.	50	12
	4	If treatment has been long and termination is sudden.	10	2
	7	Shock mentioned, but "adrenal insufficiency" not mentioned by name.	28	7
	5	Neither adrenal insufficiency nor shock mentioned.	195	47
	0	No problem in taking a patient off steroids.	43	10
	X	No answer/not asked	7	2
	Y	Don't know to entire question	7	2
			413	100%

STEROID -- ITEM 1

RAW ITEM SCORE

The above two classifications relating to rebound effect and adrenal insufficiency were combined into an index in the following way:

Rebound effect would occur:	Adrenal insufficiency would occur:			
	Even if tapered off slowly (12/1, 2)	Response as to sudden termination not recorded (12/7)	Only if drugs stopped suddenly (12/3, 4)	Not mentioned, don't know (12/5, 0, y)
Even if tapered off slowly (11/1, 2)	Score 8	Score 7	Score 6	Score 4
Only if drugs stopped suddenly (11/3, 4)	Score 7	Score 5	Score 5	Score 3
Not mentioned, don't know (11/5, 0, y)	Score 4	Score 3	Score 2	Score 1

Item scores as shown were punched in column 50.

STEROID -- ITEM 2

INFORMATION ITEM

A patient being started on long-term steroid therapy should be instructed to report signs of adrenal insufficiency; to report signs of certain other side effects; to maintain his steroid dose as instructed regardless of possible fluctuations in his symptoms; and to inform any other physician who may care for him during stress situations that he has been on steroids. Alternately, the physician may query the patient on these matters during frequent check-ups.

INTERVIEW QUESTION

Q. 39 a. Suppose a patient is being started on a long-term course of adrenal cortical steroid treatment -- say for rheumatoid arthritis -- should the patient be given any special instructions?

IF YES:

b. What instructions?

c. Should he be given any other instructions?

IF YES:

What?

IF ONLY SIDE EFFECTS MENTIONED SO FAR:

d. Aside from warning him of side effects, should he be given any other instructions?

ASK ALL SAYING "YES" TO Q. 39 a.:

e. When such a patient comes in for his check-up, what are the things the doctor should find out by asking the patient?

f. Is there anything else he should find out by asking the patient?

IF YES:

What?

STEROID -- ITEM 2

INITIAL CLASSIFICATION OF RESPONSES

	Code	Patient should be instructed to:*	Number	Per Cent[a]
Column 21/	1	Keep dose uniform.	149	36%
	2	Tell new MD that on steroids, carry a card saying that you are on steroids, or let family know that he is on steroids.	72	17
	3	Report signs of adrenal insufficiency.	83	20
		Report the following side effects:		
Column 22/	1	Bleeding or ulceration, including: bleeding tendencies unspecified; gastro-intestinal bleeding; blood in stool, black stool; easy brusing, black and blue spots; peptic ulcer symptoms; and body marks unspecified.	210	51
	2	Water retention, including: sudden weight gain; swelling of feet or legs; edema; water retention unspecified; salt retention	288	70
	3	Diabetes, including: excessive thirst	83	20
	4	Characteristic fat accumulation, including: moon face; puffiness of face; change in facial contours; buffalo hump	86	21
	5	Signs of hirsutism, susceptibility to infection or psychological disturbances, including: hirsutism, sudden hair growth; depression; euphoria and other psychological disturbances; poor wound healing; easy infection and pus in local wounds; susceptibility to infection unspecified	181	44
	6	Other definite side effects	43	10
	7	None of these side effects mentioned	24	6

*Code 21/0 designates those who did not mention instructions 21/1, 2, 3, but did mention reporting side effects. Code 22/7 designates those who did not mention reporting side effects but did mention one of the instructions 21/1, 2, 3. 21/X, 22/X = No answer/Not asked. 21/Y, 22/Y = Don't know.

[a] Percentages total over 100 because some doctors mentioned more than one side effect.

STEROID -- ITEM 2

RAW ITEM SCORE

Physicians mentioning varying numbers of instructions according to the above classifications were scored as follows:

		How many of first three instructions (21/1, 2, 3) were mentioned			
		3	2	1	0
Instructions to report side effects -- how many were mentioned (22/1-5)	5	NO CASES		Score 9	Score 6
	4	Score 14	Score 11	Score 8	Score 5
	3	Score 13	Score 10	Score 7	Score 4
	2	Score 12	Score 9	Score 6	Score 3
	1	NO CASES	Score 8	Score 5	Score 2
	0		Score 7	Score 4	Score 1

This score was punched into Columns 51-52.

STEROID -- ITEM 3

INFORMATION ITEM

When a person in long-term steroid treatment undergoes an acute febrile illness or surgical operation his steroid dose should be increased as the insufficient adrenal gland would not give the normal stress response of the increased steroid output needed in times of stress. Replacement by ACTH, would not be adequate since the presumably deficient adrenal cortex may not respond to ACTH.

INTERVIEW QUESTION

Q. 40 a. Now please think of a patient who has been receiving large doses of steroids (the equivalent of at least 15 milligrams of prednisone daily) for a fairly long time (a year or more) (for an asthmatic condition) --

Suppose he comes down with an acute febrile illness (bronchial pneumonia) or that a surgical procedure (some kind of abdominal surgery) is indicated --

What should be done about his steroid treatment at such a time? Should it be continued as is, stopped, increased, decreased, or replaced with A-C-T-H?

b. Why should this be done?

c. Why does this apply especially at a time of surgery or febrile illness?

IF DOCTOR DID NOT MENTION ACTH SO FAR:

d. Why couldn't A-C-T-H be used to do the job?

STEROID -- ITEM 3

INITIAL CLASSIFICATION OF RESPONSES

	Code	Regimen in stress during steroid treatment	Number	Per Cent
		Steroid treatment should be:		
Column 23/	1	Continued as is	81	20
	2	Stopped	18	4
	3	Increased	188	46
	4	Decreased or decreased and add ACTH	24	6
	5	Continued and add ACTH	28	7
	6	Increased and add ACTH	23	6
	7	Replaced with ACTH	25	6
	8	Other	0	0
	9	Don't know	23	6
	X	No answer/not asked	3	1
			413	100%

	Code	Reason for increasing or continuing steroid administration during stress	Number	Per Cent
		Complete statement:		
Column 24/	1	Adrenal insufficiency exists after long term treatment and stress situation demands additional steroids which the body can't produce	209	51%
		Partial statements:		
	2	Because of adrenal insufficiency	30	7
	3	Because there is a stress situation and there is greater steroid need (no mention of adrenal insufficiency)	42	10
	4	Because of stress (unspecified)	42	10
		Inadequate statements:		
	5	Because you can't stop giving the steroids (unspecified)	9	2
	9	This reason not given by respondent, although would increase or continue steroid treatment	14	3
		Not applicable:		
	0	Would decrease or stop steroids, or replace them with ACTH	57	14
	X, Y	Don't know, no answer	10	3
			413	100%

STEROID -- ITEM 3

	Code	Use of ACTH in stress situation during steroid treatment	Number	Per Cent
		Did not suggest ACTH in Q. 40 a.-c., and gave adequate reason in Q. 40 c.:		
Column 27/	1	Long term steroid treatment produced long term adrenal insufficiency, and therefore sudden replacement with ACTH would not produce adequate steroids for stress situation.	93	22
	2	Adrenal insufficiency (not elaborated)	38	9
		Did not suggest ACTH in Q. 40 a.-c., but gave inadequate or no reason in Q. 40 d.:		
	3	Technical reasons; that is, ACTH cannot be maniuplated properly; other marginal reasons of this type (e.g., ACTH cannot be given intravenously); or no reason	9	2
	5	ACTH acts too slowly	59	14
	7	Other reason	11	3
	6	No reason given	92	22
	0	Did suggest ACTH in Q. 40 a.-c.	94	23
	Y	"Don't know" in Q. 40 a.-c.	6	2
	X	No answer	11	3
			413	100%

STEROID -- ITEM 3

RAW ITEM SCORE

Item scores were assigned to the various possible combinations of the preceding three classifications as shown in the following paradigm:

		Reason for increased or continuing steroid administration:			
Steriod regimen:	ACTH:	Complete statement (24/1)	Adrenal insufficiency (24/2)	Stress (24/3, 4)	Inadequate statement or not applicable (24/5, 9, 0)
Increase (23/3,6)	Use not suggested, adequate reason (27/1, 2)	Score 10	Score 9	Score 8	Score 4
	Inadequate reason, or use suggested (27/3, 5, 6, 7, 0, Y)	Score 9	Score 8	Score 7	Score 3
Continue as is (23/1,5)	Use not suggested, adequate reason (27/1, 2)	Score 7	Score 6	Score 5	Score 3
	Inadequate reason, or use suggested (27/3, 5, 6, 7, 0, Y)	Score 6	Score 5	Score 4	Score 2
Decreased, stop, replace with ACTH, or don't know (23/2, 4, 7,9)		Score 1	Score 1	Score 1	Score 1

This score was punched into Columns 53-54. 24/6,X and 27/8,X were excluded from the score.

STEROID -- ITEM 4

INFORMATION ITEM

The known side effects of prolonged steroid treatment include aseptic necrosis of hip and shoulder; decreased growth in children; hypokalemia; and perforation of diverticulum of the colon.

INTERVIEW QUESTION

Q. 41 a. As you know, steroid treatment can have a wide range of different side effects. Please tell me which of them are known to be side effects of prolonged steroid treatment at least occasionally: asceptic necrosis of hip or shoulder, decreased growth in children, hyperkalemia, hypokalemia, perforation of diverticulum of the colon, proteinuria.[a]

[a] In the face-to-face interview, the physicians were handed a card on which these conditions were listed.

INITIAL CLASSIFICATION OF RESPONSES

	Code	Steroid side effects	Correct response	Number	Per Cent[a]
Column 44/	1	Asceptic necrosis of hip or shoulder	Yes	111	27%
	2	Decreased growth in children	Yes	178	43
	3	Hyperkalemia	No	112	27
	4	Hypokalemia	Yes	223	54
	5	Perforation of diverticulum of the colon	Yes	276	67
	6	Proteinuria	No	140	34
	7	Don't know		24	6
	X	No answer		3	1

RAW ITEM SCORE

The raw item score is equal to the number of correct responses given. Item scores were punched into Columns 55-56.

---

[a] Percentages total over 100 because some doctors mentioned more than one side effect.

STEROID -- ITEM 5

INFORMATION ITEM

Steroid-induced thinning of the skin and ulcerated areas do not respond to ascorbic acid.

INTERVIEW QUESTION

Q. 42 a. Sometimes the administration of adrenal cortical steroids leads to thinning of the skin and ulcerated skin areas.

What has been the success of administering Vitamin C for steroid-induced conditions like that -- would you say it brings about marked improvement most of the time, only occasionally, rarely, or never?

INITIAL CLASSIFICATION OF RESPONSES AND RAW ITEM SCORE

	Code	Ascorbic acid effectiveness	Raw item score	Number	Per Cent
Column 29/	1	Most of the time	1	25	6%
	2	Occasionally	2	90	22
	3	Rarely	4	83	20
	4	Never	5	37	9
	5	Don't know	3	174	42
	X	No answer	0	4	1
				413	100%

Raw item score was punched into Column 57.

APPENDIX A

Section II: HYPERTENSION

Item No.	Information Items
1	Hypertension prevalence
2	Strength of evidence of serious sequelae
3	Thiazide side effects
4	Bruits
5	Malignant hypertension life expectancy

Item 2 was not used in the computation of the area score for hypertension.

The frequency distributions for the raw item scores are shown on page A-60.

HYPERTENSION -- ITEM 1

INFORMATION ITEM

Essential hypertension is estimated to be present in 5-10% of the U.S. population; is twice as common in women as in men; remains asymtomatic an average 15 years after first diagnosis.

INTERVIEW QUESTION

Q. 43 Now I would like to ask you some questions about the prevalence of essential hypertension.

About what percentage of the United States population is estimated to have essential hypertension -- is it less than 1%, from 1 to 4%, from 5 to 10%, from 11 to 25%, from 26% to 33%, or over 33%?[a]

Q. 44 a. Is the prevalence of essential hypertension higher among men or among women?

IF HIGHER AMONG MEN OR AMONG WOMEN:

b. Is it just somewhat higher, or is it more than twice as high?

IF "DEPENDS ON AGE":

c. Before the age of menopause is it higher among men or women?

d. After the age of menopause is it higher among men or women?

Q. 45 High blood pressure as you know is often diagnosed long before the patient has any complaints connected with it. On the average, about how much time elapses between the initial diagnosis of essential hypertension and the appearance of the first signs or symptoms of organic complication -- is it about 1 to 2 years, about 5 years, about 10 years, about 15 years, about 20 years, or 25 years or more?[a]

---

[a] In the face-to-face interview, the physicians were handed cards on which these estimates were listed.

HYPERTENSION -- ITEM 1

INITIAL CLASSIFICATION OF RESPONSES

	Code	Prevalence of essential hypertension	Sub score	Number	Per Cent
Col. 9/	1	Less than 1%	0	11	3%
	2	1 - 4%	0	60	14
	3	5 - 10%	2	166	40
	4	11 - 25%	1	94	23
	5	26 - 33%	0	24	6
	6	Over 33%	0	19	5
	0	Don't know	0	35	8
	Y	No answer/not asked	x	4	1
				413	100%

	Code	Prevalence of essential hypertension among men and women	Sub score	Number	Per Cent
Col. 10/	1	Higher among men	0	223	54%
	2	Higher among women	1	135	33
	3	About equal	0	21	5
	4	Depends on age	0	11	3
	5	Don't know	0	20	5
	X	No answer/not asked	x	3	1
				413	100%

	Code	If higher among men or among women	Sub score	Number	Per Cent
Col. 11/	1	Just somewhat higher	0	206	50%
	2	Twice as high or more	1	130	32
	3	Don't know	0	22	5
	0	Does not apply	0	53	13
	X	No answer/not asked	x	2	--
				413	100%

	Code	Time from initial diagnosis	Sub score	Number	Per Cent
Col. 14/	1	About 1 - 2 years	0	49	12%
	2	About 5 years	0	155	37
	3	About 10 years	1	107	26
	4	About 15 years	2	43	10
	5	About 20 years	1	19	5
	6	25 years or more	0	---	---
	0	Don't know	0	36	9
	X	Not asked/no answer	x	4	1
				413	100%

HYPERTENSION -- ITEM 1

RAW ITEM SCORE

The item score consists of the sum of the three sub-scores described above, and ranges from zero to six. The item score was punched in Column 60.

HYPERTENSION -- ITEM 2

INFORMATION ITEM

There is strong evidence for the importance of essential hypertension as a forerunner of coronary disease and cerebrovascular accident later in life; the evidence is more conclusive with regard to cerebro-vascular accident than with regard to coronary disease.

INTERVIEW QUESTION

Q. 46 a. It has been said that essential hypertension is often a precursor of coronary disease or cerebral vascular accidents later in life.

Is the causal connection between essential hypertension and cerebro-vascular accident supported by definitive evidence, preponderant evidence, suggestive evidence, or only dubious evidence?

b. How about the causal connection between essential hypertension and coronary disease -- would you say it is supported by better evidence than the connection between hypertension and stroke, by weaker evidence, or only by dubious evidence?

HYPERTENSION -- ITEM 2

INITIAL CLASSIFICATION OF RESPONSES

	Code	Evidence for causal connection between essential hypertension and cerebrovascular accident	Number	Per Cent
Column 15/	1	Definitive	121	29%
	2	Preponderant	162	39
	3	Suggestive	102	25
	4	Dubious	19	4
	5	Other	0	0
	6	Don't know	6	2
	X	Not asked/no answer	3	1
			413	100%

		Evidence for causal connection between essential hypertension and coronary disease		
Column 16/	1	Better evidence	127	31%
	2	About the same	83	20
	3	Weaker evidence	159	39
	4	Dubious evidence	25	6
	5	Other (specify)	1	---
	6	Don't know	10	2
	0	DNA (15/6--"Don't know" to Q. 46 a.)	6	2
	X	Not asked/no answer	2	2
			413	100%

HYPERTENSION -- ITEM 2

RAW ITEM SCORE

The above two classifications for the causal connection between essential hypertension and both cerebrovascular accident and coronary disease were combined into an index in the following manner:

Coronary Evidence	Cerebrovascular accident					
	Definitive 15/1	Preponderant 2	Suggestive 3	DK 6	Dubious 4	Other 5
Better 16/1	7	7	6		2	---
Same 2	8	8	5		1	---
DK 6						---
Weaker 3	9	9	4			---
Dubious 4	3	3	3			---
DNA (15/6) 0				4		
Other 5	2	---	---	---	---	---

The raw item score was punched into Column 61.

HYPERTENSION -- ITEM 3[1]

INFORMATION ITEM

Version A -- Gout-Diabetes Awareness:

Thiazide drug side effects include:	raised blood sugar levels; raised uric acid levels; may provoke attacks of gout; may give rise to diabetes.

Version B -- General Thiazide Side Effects Awareness

Thiazide side effects include:	diabetes; gout; blood dyscrasia; skin rashes; parathesia; potassium depletion of hypochloremia; postural hypotension; and when given in combination with potassium chloride drugs, also ulcers of the small intestine; when not given in combination thiazide does not lead to ulcers of the small intestine.

INTERVIEW QUESTION

Q. 48 a. What are the possible side effects of Thiazide drugs when used to reduce blood pressure?

b. Anything else?

---

[1] Answers to Question 48 were scored for both versions of this information item, but only Version B was included in the Area Score and Grand Score.

HYPERTENSION -- ITEM 3

INITIAL CLASSIFICATION OF RESPONSES

	Code	Thiazide side effects	Sub score for Version B	Number	Per Cent[a]
Col. 18/	1	Diabetes--full awareness (Diabetes; false diabetes; raised blood sugar; hyperclycemia)	2	73	18%
	2	Diabetes--partial awareness (Glycosuria)--no mention of "diabetes" or "blood sugar"	1	4	1
	3	Gout--full awareness (Gout, raised blood levels of uric acid; hyperurecemia; elevated-uric acid)	2	89	22
	4	Gout-partial awareness (Acute arthritis; arthritic symptoms--no mention of "gout" or "uric acid")	1	6	2
	5	Blood dyscrasia (Destruction of blood cells; effect on white blood count; thrombocytopenia (but NOT "thrombocytosis" which is 19/5))	2	15	4
	6	Skin rashes (Skin rashes; drug rashes; rashes; hives; dermatitis; purpura; photosensitivity)	2	44	11
	7	Parathesia	2	1	---
	9	Potassium depletion of Hypochloremia (Potassium depletion; lowered potassium level; potassium loss; potassium depression; hypokalemia; hyposhloremia)	2	322	78
	0	Fluid or electrolyte depletion or azotemia--not specifying potassium (Electrolyte imbalance or disturbance, electrolyte depletion; lowered electrolyte levels in blood; hyponatremia; sodium depletion; dehydration; poly ria; azotemia; weakness; lethargy; sluggishness; drowsiness; frequent urination; dryness; dehydration; thirst; thirst and weight loss; elevated B.U.N. (azotemia); nitrogen retention)	1	175	42
	X	Postural hypotension (postural hypotension; fainting in upright position; low blood pressure on standing; orthostatic hypotension; dizziness)	1	68	17
	Y	None of the above mentioned			

---

[a] Percentages total over 100 because some doctors mentioned more than one side effect.

HYPERTENSION -- ITEM 3

INITIAL CLASSIFICATION OF RESPONSES

	Code	Thiazide side effects	Sub score for Version B	Number	Per Cent[a]
Col. 19/	1	Ulcer of small intestine (no mention of combination drugs) (ulcer of small intestine; perforation of small bowel; peptic ulcer; intestinal ulcer; ulcer; colonic ulcer)	minus 1	55	13%
	2	Ulcer of small intestine caused by potassium chloride drugs when given in combination with thiazide	0	9	2
	4	Common side effects which Thiazide shares with other diuretics and many other drugs (gastric upset; nausea; diarrhea; intestinal distress; indigestion)	0	75	18
	5	Replies which are incorrect or too far-fetched or too vague to be given credit or simply signs of excessive dosage: acidosis, abdominal distention, affects kidney, aggravates nephrasis, allergies (not specified), bowel obstruction, cortical changes, dryness of skin, edema of legs, water retention, gives them dreams, headache, ileitis, insomnia, intolerance to drug, toxicity (not specified), irritation of bladder, limits potency, liver damage, mental deterioration, myocardial weakness, osteoperosis, precipitate C.V. A. by reducing of blood pressure, proteinuria, retention of sodium salt, ringing in ears, shock, sinus condition, strain on heart, thrombecysis, tingling sensation, tremors, urinary distress, vitamin decrease	0	15	4
	9	Others (includes: glaucoma; eye trouble; effects fetus in pregnancy; pancreatitis; trouble during anaesthesia; secondary anemia)	0	15	4
	0	None of 19/1-9 mentioned	0	16	4
	X	Don't know	0	8	2
	Y	Not asked/not answered			

---

[a] Percentages total less than 100 because some doctors did not mention the side effects coded in this column.

HYPERTENSION -- ITEM 3

RAW ITEM SCORES

Version A -- Gout-Diabetes Awareness Score:

Two points each were given for 18/1 and 18/3. One point each was given for 18/2 and 18/4. This score was punched into Col. 62.

Version B -- Thiazide Side Effects Score:

Two points each were given for 18/1, 3, 5, 6, 7, 9. One point each was given for 18/2, 4, 0, X. One point was subtracted for 19/1. This score was punched into Columns 63-64.

HYPERTENSION -- ITEM 4

INFORMATION ITEM

Bruits in connection with renal artery disease are heard more frequently over the abdomen (in the neighborhood of the umbilicus) than over the back.

INTERVIEW QUESTION

Q. 49 a. Here is a question about the diagnosis of renal artery disease. One sign of renal artery disease is the bruits that are sometimes heard in patients with high blood pressure.

Are they heard most frequently when listening from the back over the kidneys, over the femoral arteries, or in the neighborhood of the umbilicus?

IF "BACK OVER KIDNEYS" OR "FEMORAL ARTERIES":

b. Are the bruits in renal artery disease ever heard in the neighborhood of the umbilicus?

HYPERTENSION -- ITEM 4

INITIAL CLASSIFICATION OF RESPONSES AND RAW ITEM SCORE

	Code	Where bruits are heard	Raw Item Score	Number	Per Cent
Column 20/	1	Back over kidneys		106	26%
	2	Femoral arteries		63	15
		Total of above		169	41%
		This includes:			
Column 21/	7	Never heard near umbilicus	1	35	9%
	8	(t.a. 20/1, 2) Don't know if ever heard near umbilicus	2	54	13
	6	Sometimes heard near umbilicus	3	80	19
Column 20/	4	Don't know	4	119	29
	3	Umbilicus	5	123	30
	5	Other		0	0
	X	No answer/not asked		2	---
				413	100%

The raw item score was punched in Column 65.

HYPERTENSION -- ITEM 5

INFORMATION ITEM

The life expectancy in untreated malignant hypertension is about one year; with vigorous hypotensive measures, the five-year survival rate is about one-third.

INTERVIEW QUESTION

Q. 51 a. Now let's turn for a moment to malignant hypertension. What is the average life expectancy with untreated malignant hypertension -- is it closer to half a year, one year, two years, five years, or ten years?

b. Doctors have applied chemical, dietary, and surgical measures to reduce blood pressure in malignant hypertension. Have they succeeded in extending life this way?

c. About what is the 5-year survival rate with malignant hypertension treated in this way?

IF DON'T KNOW TO C:

d. Would you say that life has been extended in a significant degree this way?

HYPERTENSION -- ITEM 5

INITIAL CLASSIFICATION OF RESPONSES

	Code	Life expectancy with untreated malignant hypertension	Number	Per Cent
Column 28/	1	Half a year	87	21%
	2	1 year	106	26
	3	2 years	109	26
	4	5 years	76	18
	5	10 years	17	4
	6	Other	5	1
	0	Don't know	9	2
	X	No answer/not asked	2	1
		Success in extension of life		
Column 29/	1	Yes	332	80%
		This includes:		
		5-year survival rate with treatment[a]		
Column 43/	1	30 - 35%	20	5%
	2	36 - 50%	67	16
	3	15 - 29%	31	8
	5	51% or more	50	12
	6	00 - 14%	48	12
	X	Don't know		
		This includes:		
		Significant extension of life		
Column 32/	1	Yes	78	19%
	2	No	13	3
	3	Don't know	16	4
Column 29/	2	No	61	15%
	5	Don't know	17	4

---

[a] This was originally coded in ungrouped per cents in Columns 30-31, but was later grouped and coded in Column 43.

HYPERTENSION -- ITEM 5

RAW ITEM SCORE

The above items were combined into an index in the following manner:

		Untreated malignant hypertension				
Success in Extending Life (Five year Survival Rate Columns 30-31	Punched into Column 43/	1 year 28/2	½ year 1	2 years 3	DK 0, 6	5 years-10 years 4, 5
30 - 35%	1	18	17		11	
36 - 50%	2	16	15		10	
15 - 29%	3	14	13		9	
Significant (DK%)	4				8	
51% or more	5	12			7	
00 - 14%	6	9			6	
Some success (not significant or DK)	7	6			4	
DK if any success	8	5			3	
No success	9	2			1	

The item score was punched into Columns 66-67.

APPENDIX A

SECTION III: BACTERIAL INFECTIONS

Item No.	Information Items
1	Reasons for varying needs for sensitivity tests
2	Organisms calling for sensitivity tests
3	Awareness of semi-synthetic penicillins
4	Properties of semi-synthetic penicillins
5	Equivalence of brand and generic names of penicillins
6	Reasons for oral usability of some penicillins
7&8	Mechanisms of resistance to Penicillin G
9	Cephalothin
10	Preferability of Penicillin G or V in Staphilococcus infections

Items 2, 5 and 10 were not used in the computation of the area score for bacterial infections.

Item 7 & 8 is considered one item for purposes of summarizing the area score.

The frequency distributions for the raw item scores are shown on page A-61.

BACTERIAL INFECTION -- ITEM 1

INFORMATION ITEM

The reason why sensitivity tests are indicated for some organisms and not others is that some are uniformly susceptible (or, more rarely, resistant) to available drugs, while the sensitivity of others is different for different strains, and/or has fluctuated in the course of the years since the introduction of antibiotics.

INTERVIEW QUESTION

Q. 55 a. Some doctors feel a sensitivity test is desirable almost any time that a culture is called for, others think it is only necessary with certain kinds of organisms. What is your opinion?

b. Why is it that sensitivity tests are more desirable with certain organisms than with others?

INFECTIONS -- ITEM 1

INITIAL CLASSIFICATION OF RESPONSES AND RAW ITEM SCORE

	Code	Sensitivity test desirable? Why?	Raw Item Score[a]	Number	Per Cent[b]
Column 16/	1	(Complete answer): it depends on the organism: some are known to have a uniform and continuous sensitivity to certain antibiotics; the sensitivity of other types depends on the strain in question	7	11	3%
	2	Some strains more sensitive than others, with no further justification	6	70	17
	3	It depends on the organism; most you don't have to	5	7	2
	4	It depends on the organism	4	58	14
	5	"It may not always be needed, but it never hurts to do it" without reference to why it is not always needed (see 16/1 above)	3	155	38
	6	"In many cases you don't know which antibiotic to use, and the sensitivity test will tell you" without reference to why it is not always needed (see 16/1 above)	2	186	45
	7	You should always perform a sensitivity test, and the assorted justifications that might go with that answer	1	52	13
	8	You rarely need a sensitivity test, no explanation why	1	5	1
	9	"It depends," "wrong conditions," or "it depends on organism" and wrong reason	1	12	3
	X	Not asked	--	2	1
	Y	Don't know	1	4	1

---

[a] In the raw item score if the answer fell into more than one category, the highest applicable score was assigned. The raw item score was punched in Column 63.

[b] The percents add to more than 100 because some doctors gave more than one response.

BACTERIAL INFECTION -- ITEM 2

INFORMATION ITEM

Variations in susceptibility to antibiotics warrant a sensitivity test when organisms marked + are identified in pathogenic sites and quantities; antibiotic susceptibility of organisms marked -- is constant enough to make sensitivity tests unnecessary:

E. Coli	+
Enterococcus	+
Hemophilus influenzae	-
Klebsiella	+
Salmonella	-

INTERVIEW QUESTION

Q. 55 c. Would you find a sensitivity test necessary if E. Coli organisms are identified in a culture from the urine or blood?

d. I am going to read you the names of some infectious organisms. Please tell me for each whether or not you would find a sensitivity test necessary if they were identified in a culture from the sputum or blood. Enteroccoccus? -- Hemophilus influenzae? -- Klebsiella? -- Salmonella?[a]

---

[a] The physicians in the face-to-face interview were handed a card on which each of these infectious organisms were listed.

INFECTIONS -- ITEM 2

INITIAL CLASSIFICATION OF RESPONSES

	Code	Necessity of Sensitivity Test	Sub-Score[a]	Number	Per Cent
		with E. Coli			
Column 17/	1	Yes	+2	261	63%
	2	No	-2	113	27
	3	Don't know	0	12	3
	X	Not asked		27	7
				413	100%
		with enterococcus			
Column 18/	1	Yes	+2	266	64
	2	No	-2	95	23
	3	Don't know	0	23	6
	X	Not asked		29	7
				413	100%
		with hemophilus influenzae			
Column 19/	1	Yes	-3	197	48
	2	No	+3	170	41
	3	Don't know	0	16	4
	X	Not asked		30	7
				413	100
		with klebsiella			
Column 20/	1	Yes	+2	242	59
	2	No	-2	105	25
	3	Don't know	0	35	9
	X	Not asked		31	7
				413	100%
		with salmonella			
Column 21/	1	Yes	-3	225	54
	2	No	+3	136	33
	3	Don't know	0	23	6
	X	Not asked		29	7
				413	100%

---

[a] Different sub-scores were assigned to the above items where the correct answer is "yes" and "no" in order to simulate a test with an equal number of items.

INFECTIONS -- ITEM 2

RAW ITEM SCORE

The sum of the above sub-scores ranges from -12 to +12. The number 13 was added to this sum to yield positive raw item scores which were punched into Columns 64-65.

Those who had not been asked all of the above questions were classified "insufficient information" (64-65/00).

BACTERIAL INFECTION -- ITEM 3

INFORMATION ITEM

The new kinds of penicillin released in the last several years include:

Phenethicillin

Methicillin

Oxacillin

Ampicillin

(Note: Mention of brand names will be given credit as though the corresponding generic name had been mentioned.)

INTERVIEW QUESTION

Q. 56 a. Have you used any of the new kinds of penicillins that have come out in the last couple of years?

IF "YES":

b. Which ones have you used?

c. Do you recall the names of any other new kinds of penicillin?

IF "NO" TO Q. 56a.:

d. Do you recall the names of any of the new kinds of penicillin?

INFECTIONS -- ITEM 3

INITIAL CLASSIFICATION OF RESPONSES

Responses were originally recorded separately as "used" (Columns 23-24), or merely "recalled" under whatever brand or generic name of a drug the doctor mentioned.

A combined classification (Columns 25-26) then indicated drugs either under used or recalled under each name.

Finally, mentions of each drug under any of its names were combined as shown below.

Mention of drugs as used or recalled under at least one of its names:

	Code	Generic name	Brand names	Number	Per Cent[a]
Column 27/	1	Ampicillin	Polycillin, Penbritin	240	58%
	2	Methicillin	Staphcillin, Celbenin, Dimocillin	187	45
	3	Oxacillin	Prostaphlin, Resistopen	191	46
	4	Phenethicillin	Syncillin, Alpen, Broxil, Chemipen, Darcil, Dramicillin, Maxipen, Rocillin, Semopen	128	31
	5	Nafcillin	Unipen	128	31
	6	Diphenicillin	Ancillin	11	3
	0	None recalled or used		52	13
	Y	Not asked		28	7

---

[a] The numbers add to more than 100% because the doctor may have named more than one variety of penicillin.

INFECTIONS -- ITEM 3

RAW ITEM SCORE

The number one was added to the number of the above six varieties of penicillin which were mentioned under at least one of their names (i.e., the number of punches 27/1-6) to yield a raw item score ranging from 1 to 7, which was punched in Column 66.

BACTERIAL INFECTION -- ITEM 4

INFORMATION ITEM

The several semi-synthetic penicillins have the properties marked by + signs below:

	Effective against Gram-negative organisms besides Neisseria	Not acid susceptible (can be used orally)	Not susceptible to penicillinase (effective against Penicillin G resistant staph)
Phenethicillin	-	+	-
Methicillin	-	-	+
Oxacillin	-	+	+
Ampicillin	+	+	-

INTERVIEW QUESTION

FOR FACE-TO-FACE INTERVIEW:

(The card listed the four generic names given above and four corresponding brand names in a single alphabetical order. See also Item 5.)

Q. 58 a. I want to ask you about the effectiveness of the penicillins that are listed on this card. All of them have some effectiveness against gonococci and other Neisseria. Are any of them effective against other Gram-negative organisms besides the Neisseria? Which ones?

b. Can any of these penicillins be administered orally? Which ones?

c. Are any of these penicillins likely to work against staph strains that are resistant to Penicillin G? Which ones?

INFECTIONS -- ITEM 4

INTERVIEW QUESTION

FOR TELEPHONE INTERVIEW:

(Names of drugs were called out as follows, paring each generic name with a corresponding brand name: **Ampicillin or Policyllin?** Methicillin or Staphicillin? Oxacillin or Prostaphlin? Phenethicillin or Syncillin?

Q. 59 a. I am going to read you the names of some semi-synthetic penicillins. I will read the generic name and the brand name for each type. They all have some effectiveness against gonococci and other **Neisseria.** Please tell me for each type whether it is effective against any Gram-negative organisms besides **the Neisseria.**

b. Now please tell me for each whether it can be administered orally.

c. Finally, please tell me for each whether or not it is likely to work against resistant staph strains that are resistant to Penicillin G?

INFECTIONS -- ITEM 4

INITIAL CLASSIFICATION OF RESPONSES

Responses in the face-to-face interviews were originally recorded separately under each generic and brand name. Later generic and brand names were combined. In the case of telephone interviews, the correspondence of brand and generic names was revealed in the wording of the question.

	Code	Effectiveness against gram-negative organisms ascribed to each of the following penicillins under at least one of its names:	Number	Per Cent[a]
Column 35/	1	Ampicillin	209	51%
	2	Methicillin	77	19
	3	Oxacillin	90	22
	4	Phenethicillin	81	20
	5	None (so stated)	8	2
	X	DK which, or DK if any	117	28
	Y	Not asked	30	7

	Code	Oral effectiveness ascribed to each of the following penicillims under at least one of its names	Number	Per Cent[a]
Column 36/	1	Ampicillin	239	58
	2	Methicillin	145	35
	3	Oxacillin	249	60
	4	Phenethicillin	225	54
	5	None (so stated)	2	1
	X	DK which, or DK if any	54	13
	Y	Not asked	32	8

---

[a] The percents add to more than 100 because the doctor may have named more than one variety of penicillin.

INFECTIONS -- ITEM 4

INITIAL CLASSIFICATION OF RESPONSES

	Code	Effectiveness against resistant strains ascribed to each of the following penicillins under at least one of its names	Number	Per Cent[a]
Column 37/	1	Ampicillin	158	38%
	2	Methicillin	268	65
	3	Oxacillin	261	63
	4	Phenethicillin	97	24
	5	None (so stated)	4	1
	X	DK which, or DK if any	60	14
	Y	Not asked	32	8

---

[a] The numbers add to more than 100% because the doctor may have named more than one variety of penicillin.

INFECTIONS -- ITEM 4

RAW ITEM SCORE

The number of correct responses as above recorded could range from 0 to 12. The number one was added to yield positive raw item scores, which were punched in Columns 67-68.

In tallying correct responses, a "DK" to any of the three parts of the question was treated as four incorrect responses.

Otherwise, doctors not mentioning a drug (Q. 58) or saying "DK" about a specific drug (Q. 59) were treated as denying its effectiveness.

Physicians who had been asked only one or none of the three parts of this question were classified as "insufficient information" (67-68/00). Those who had been asked only two of the three parts were given an adjusted score.

BACTERIAL INFECTION -- ITEM 5

INFORMATION ITEM

The brand names Syncillin, Staphcillin, Prostaphlin, and Polycillin correspond, respectively, to the generic names: Phenethicillin, Methicillin, Oxacillin, and Ampicillin.

The scoring of this item was based on responses to Question 58a., which has already been reproduced in connection with Item 4 above.

As shown there, the respondent had been shown a card listing the four generic names and the four corresponding brand names in a single alphabetical order. They were asked to indicate which of the listed penicillins were effective against gram-negative organisms, which ones were effective orally, and which ones were effective against resistant staph strains.

Only responses from face-to-face interviews were used.

INFECTIONS -- ITEM 5

INITIAL CLASSIFICATION OF RESPONSES

A count was taken of the number of times a physician gave the same classification to a drug under both its generic and brand name (i.e., either ascribing effectiveness to both, or denying the effectiveness of both).

In cases where one or two of the three parts of the question had been omitted or answered DK, a pro-rated sub-score was calculated (hence the sub-score "1½" below). If the entire question had been omitted, or answered DK, or if all three types of effectiveness were denied to all the drugs, the response was classed as "insufficient information."

Number of Properties (Out of Three) with Respect to Which Each Generic Semi-Synthetic Penicillin and Its Brand Name Were Classed the Same (i.e., Property Either Ascribed to Both or Denied to Both)

	Code	Ampicillin-Polycillin	Number	Per Cent
Column 31/	0	None	32	8%
	1	One	27	6
	2	One and one half	23	6
	3	Two	44	11
	4	Three	120	29
	Not 0-4	Insufficient information	167	40
			413	100%

	Code	Methicillin-Staphcillin	Number	Per Cent
Column 31/	7	None	37	9%
	8	One	37	9
	9	One and one half	32	8
	X	Two	70	17
	Y	Three	70	17
	Not 7-Y	Insufficient information	167	40
			413	100%

INFECTIONS -- ITEM 5

INITIAL CLASSIFICATION OF RESPONSES

	Code	Oxacillin-Prostaphlin	Number	Per Cent
Column 50/	0	None	50	12%
	1	One	50	12
	2	One and one half	19	5
	3	Two	59	14
	4	Three	72	17
	Not 0-4	Insufficient information	163	40
			413	100%

	Code	Phenethicillin-Syncillin	Number	Per Cent
Column 50/	7	None	34	8%
	8	One	19	5
	9	One and one half	29	7
	X	Two	55	13
	Y	Three	113	27
	Not 7-Y	Insufficient information	163	40
			413	100%

RAW ITEM SCORE

The sum of the above four sub-scores could range from 0 to 12. This sum was multiplied by two and the number one added to yield a score of positive integers running from 1 to 25, which was punched in Columns 69-70.

Those interviewed by telephone were classed as "insufficient information."

BACTERIAL INFECTION -- ITEM 6

INFORMATION ITEM

Acid susceptibility, operative in the stomach, is what determines peroral usability of penicillins.

INTERVIEW QUESTION

Q. 60 a. What is it about the different penicillins that makes some of them usable orally and others not?

b. IF NO MENTION OF ACID-RESISTANCE: Would you care to add to what you told me, or be a little more specific?

c. Would the penicillins that are not usable orally be broken down in the esophagus, stomach, small intestine, or large intestine?

INFECTIONS -- ITEM 6

INITIAL CLASSIFICATION OF RESPONSES

	Code	Reasons for differential oral usability of penicillins	Number	Per Cent
Column 51/	1	Mentions acid resistance or acid in stomach eating up some kinds of penicillin in Q. 60a. (before probe)	108	26%
	2	Mentions above in Q. 60b. (only after probe)	27	7
	3	Quasi-correct answer without mention of acid ("some kinds eaten up in the gastro-intestinal tract" or "by the digestive juices")	105	25
	6	Vague answer, but on the right track	10	2
	4	Chemical composition of the drug (not further specified)	7	2
	7	Absorptions (some are not absorbed properly; not sufficient blood level)	61	15
	8	Irrelevant answers (allergy, bad reactions)	19	5
	X	No answer	27	6
	Y	Don't know	49	12
			413	100%

	Code	Locus of break-down of acid-susceptible penicillins	Number	Per Cent
			---	---
Column 52/	1	Esophagus	269	65%
	2	Stomach	47	11
	3	Small intestine	6	1
	4	Large intestine	7	2
	5	Other (in bloodstream, in liver)	56	14
	0	Don't know	3	1
	X	Not asked		
			388	94%

INFECTIONS -- ITEM 6

RAW ITEM SCORE

The above classifications were combined into a raw item score as follows:

Differential usability	Where broken down		
	Stomach 52/2	Elsewhere 52/1, 3-5, X	Don't know 52/0
Acid resistance 51/1, 2	9	8	
Vague but on right track 51/6	7	6	
Quasi-correct 51/3			
Chemical composition 51/4 Don't know 51/y	5	2	3
Vague, irrelevant, or wrong 51/8 Absorption 51/7	4	1	

The raw item score was punched in Column 71.

BACTERIAL INFECTION -- ITEM 7 AND 8

INFORMATION ITEM

Production of penicillinase is what makes some staph strains resistant to Penicillin G. Non-susceptibility to penicillinase is what makes some semi-synthetic penicillins effective against staph strains which resist Penicillin G.

INTERVIEW QUESTION

Q. 61 a. What is it, chemically speaking, that makes some strains of staph resistant to Penicillin G?

b. What is it about the different penicillins that makes some of them effective and others ineffective against staph strains that resist Penicillin G?

INFECTIONS -- ITEM 7 AND 8

INITIAL CLASSIFICATION OF RESPONSES

	Code	Mechanisms of resistance to Penicillin G	Number	Per Cent
Column 53/	1	The production of an enzyme (penicillinase) by some strains of bacteria makes them destroy penicillin G	92	22%
	2	Correct substance, but vague as to process: "something to do with enzymes" or "something to do with penicillinase," etc.	95	23
	3	Penicillin G doesn't penetrate some strains of bacteria	21	5
	5	Vague as to substance but right process (e.g. "destruction of penicillin" not further specified)	6	1
	6	Mentions an enzyme but the wrong one (e.g. coagulase)	2	1
	8	Wrong, irrelevant or altogether vague	19	5
	4	Others	1	---
	X	Not asked	28	1
	Y	Don't know	149	36
			413	100%

		Mechanism of effectiveness against resistant staph		
Column 54/	1	Different kinds of penicillin are differentially resistant to penicillinase	112	27
	3	Penicillinase mentioned but vague as to process	28	7
	6	Correct process without mention of penicillinase	5	1
	4	Some penicillins can penetrate the capsule around the bacteria	14	3
	5	Vague or wrong answer	65	16
	9	Irrelevant answer	3	1
	X	Not asked	29	7
	Y	Don't know	157	38
			413	100%

INFECTIONS -- ITEM 7 AND 8

RAW ITEM SCORE

The above classifications were combined into a raw item score as follows:

Resistance to Penicillin G	Effectiveness against resistant staph			
	Differential resistance to penicillinase 54/1	Penicillinase mentioned vaguely; Correct w/o name 54/3, 6	No answer Don't know 54/9, Y	Penetration theory; other wrong, irrelevant or vague answer 54/4, 5
Some produce penicillinase which destroys Penicillin G 53/1	15	14	13	6
Vague but "...destroys Penicillin G 53/5 Vague but "penicillinase" 53/2 Vague--enzyme but wrong one 53/6	12	11	8	5
Don't know 53/Y	10	9	7	2
Penetration theory 53/3 Other wrong, irrelevant, or vague answer 53/8	4	3	2	1

This score was punched into Columns 72-73.

BACTERIAL INFECTION -- ITEM 9

INFORMATION ITEM

One important recently released antibiotic is Cephalothin (Keflin).

INTERVIEW QUESTION

Q. 62 a. Do you recall the names of any new antibiotics that have been released since last summer?

IF YES:

b. What ones do you recall?

c. IF NO MENTION OF KEFLIN OR CEPHALOTHIN: Have you heard of Keflin or Cephalothin?

INITIAL CLASSIFICATION OF RESPONSES AND RAW ITEM SCORE

	Code	Recalling Keflin or Cephalothin	Raw Item Score	Number	Per Cent
Column 55/	1	Mentions cephalothin but not before probe	3	3	1%
	2	Mentions keflin but not cephalothin before probe	3	91	22
	3	Mentions both before probe	3	--	--
	4	Mentions neither before probe (c) but answers yes to probe	2	162	39
	5	Mentions neither before probe (c) but answers no to probe	1	39	9
	6	Mentions neither before probe (c) but don't know to probe	1	5	1
	7	"Not" or "don't know" to Q62a.	1	83	20
	X	Not asked	0	30	8
				413	100%

The raw item score was punched into Column 74.

BACTERIAL INFECTION -- ITEM 10

INFORMATION ITEM

The semi-synthetic penicillins are not as effective as penicillins G or V against staphilococcus infections, and should not ordinarily be used unless resistant staph is strongly suspected.

INTERVIEW QUESTION

, Q. 57a . Here is a list of semi-synthetic penicillins. In case of staph infection, would you prefer to use one of these newer penicillins, or would you prefer Penicillin G or V?[a]

IF DEPENDS:

b. What are the circumstances when you would prefer Penicillin (G) (or) (V) to the semi-synthetics?

IF PENICILLIN G AND/OR V:

c. Why would you prefer Pencillin (G or V) for a staph infection (in these circumstances)?

---

[a] The doctor was handed a card on which the choice were listed. Only doctors who were interviewed face-to-face were asked Q. 57 a.-c.

A-57/58

INFECTIONS -- 10

CLASSIFICATION OF RESPONSES AND RAW ITEM SCORE

	Code	Which penicillin for staph infection	Raw Item Score	Number	Per Cent[a]
Column 28/	1	A newer penocillen from card	1	194	47%
	2	Penicillin G and/or V	2	43	10
		This includes: Why use penicillin G and/or V[a]			
Column 30/	1	G or V are effective against most sensitive staph infections, while semi-synthetics are not as effective except when staph is resistant to G or V		1	
	2	G or V are effective against most staphs		20	
	5	More economical		6	
	6	More familiar with G or V		10	
	7	Other		14	
	8	No reason		--	
	X	Not asked/no answer		8	
	Y	Don't know		2	
Column 28/	3	Depends		17	4%
		This includes choice of penicillin "depends"[a]			
Column 29/	1	For most staphs, but when resistant staph use semi-synthetics	4	3	
	2	For most staphs	4	3	
	3	Use G or V until it proves ineffective	4	-	
	7	Others (depends on sensitivity test)	3	10	
	8	Not often, or never	3	-	
	X	Not asked/no answer	3	5	
	Y	Don't know	3	1	
Column 28/ (continued)	4	Other		2	1%
	5	Don't know	2	7	2
	X	Not asked	0	5	1
				268	65%
	R	Telephone interview - Q. 57 not asked	0	145	35
		RAW ITEM SCORE		413	100%

The doctor was given a raw item score as shown above. Those doctors who were interviewed over the telephone (and not asked this question) were scored zero. The score was punched into Column 75.

---

[a] Some doctors gave more than one reason or condition.

A 59

Distribution of Raw Item Scores
(Per cent of Physicians)

STEROIDS

Score	No. 1	No. 2	No. 3	No. 4	No. 5
1	25%	7%	17%	1%	6%
2	8	7	4	6	22
3	6	13	7	19	42
4	31	11	4	31	20
5	7	12	4	27	9
6	1	15	10	14	
7	9	12	12	3	
8	12	10	7		
9		7	20		
10		4	17		
11		.5			
12		.2			
13		.7			
14		.2			
TOTAL N=	100% (410)	100% (410)	100% (410)	100% (410)	100% (410)
Insufficient information	3	3	3	3	3

Distribution of Raw Item Scores
(Per cent of Physicians)

HYPERTENSION

Score	No. 1	No. 2*	No. 3	No. 4	No. 5
1	16%	3%	1%	9%	4%
2	23	2	7	13	11
3	27	4	9	20	1
4	19	9	22	29	4
5	11	6	26	30	3
6	3	9	14		15
7	1	20	9		6
8		16	6		4
9		31	4		3
10			2		5
11			.5		.2
12			.2		7
13			.2		14
14					7
15					7
16					4
17					3
18					2
TOTAL	100%	100%	100%	100%	100%
N=	(410)	(410)	(410)	(410)	(410)
Insufficient information	3	3	3	3	3

*Item not used in final score

A 61

Distribution of Raw Item Scores
(Per cent of Physicians)

BACTERIAL INFECTIONS

Score	No. 1	No. 2*	No. 3	No. 4	No. 5*	No. 6	No. 7,8	No.9	No.10*
1	19%	.8%	13%	6%	1%	9%	6%	33%	74%
2	15	0	17	1	0	3	10	42	3
3	30	0	24	9	0	6	1	24	4
4	14	0	23	6	0	12	0		19
5	2	2	16	9	1	5	4		
6	18	0	5	10	0	6	3		
7	3	2	1	14	4	24	31		
8		0		11	0	7	5		
9		6		12	2	23	1		
10		1		15	2		.3		
11		9		8	4		4		
12		3		0	0		13		
13		33			21		2		
14		2			0		3		
15		13			5		16		
16		.3			8				
17		7			9				
18		.3			0				
19		9			28				
20-25		12			15				
TOTAL N=	100% (385)	100% (386)	100% (386)	100% (386)	100% (247)	100% (386)	100% (386)	100% (386)	100% (263)
Insufficient information	28	27	27	27	166	27	27	27	150

*Item not included in final score

PHYSICIANS' INFORMATION

APPENDIX B:

Interview Schedule

(Except for information test
questions, which are repro-
duced in Appendix A)

Note: **Pre-coding, although printed on the origial interview schedule, is not reproduced here.**

SRS-820
2-65

BUREAU OF APPLIED SOCIAL RESEARCH
Columbia University

NATIONAL OPINION RESEARCH CENTER
University of Chicago

Interview Number: ____________

Time Began: ____________

PHYSICIANS' INFORMATION SURVEY

1. A. Do you have a general practice or do you specialize?

General practice (SKIP TO Q.2 .
Specialize (ASK B-F)
Both (ASK B-F)
General practice with special interest (ASK B-F)

IF "SPECIALIZE," "BOTH" OR "SPECIAL INTEREST," ASK B-F

B. What is your specialty (special field of interest)?

Internal medicine (nothing else mentioned) (SKIP TO E & F)

Other (Specify & ASK C)

____

____

____

IF "OTHER" TO B, ASK C

C. (Is that a) (Are all of these) sub-specialty(ies) of Internal Medicine?

Yes (SKIP TO E&F)
No (ASK D)

IF "NO" TO C, ASK D

D. Is more than 50% of your practice devoted to the specialty(ies) which (is) (are) not considered Internal Medicine?

Yes (DISCONTINUE INTERVIEW)
No (ASK E & F)

ASK E ABOUT ALL SPECIALTIES OR FIELDS OF INTEREST MENTIONED

E. What percentage of your practice falls within (INSERT NAME OF EACH SPECIALTY OR FIELD)?

Specialty/Field	Percent

ASK ONLY IF SPECIALIST (Q.1-A)

F. What percentage of your patients have another doctor as a family physician for ordinary complaints?

2. A. Do other doctors share your office with you? (SHARING MAY MEAN SIMPLY SHARING A WAITING ROOM, OR RECEPTIONIST, OR ENTRANCES)

Yes (ASK B-E)
No (ASK E)

Besides yourself --

B. How many general practitioners share your office? ____________

C. How many internists? ____________

D. How many other specialists? ____________

E. (In addition to these) Are there any other doctors' offices in the same building?

Yes
No
Don't know

3.A. Did you serve an internship?

Yes (ASK B & C)
NO (SKIP TO Q. 5)

IF YES, ASK B & C

B. At what hospital?

C. In what town and state?

Hospital	City/Town	State

---

4. A. Did you serve a residency?

YES (ASK B-D)
NO (SKIP TO Q. 5)

IF YES, ASK B-D

B. At what hospital? (RECORD BELOW)

C. ASK FOR EACH HOSPITAL: In what town and state was that? (RECORD BELOW)

D. ASK FOR EACH HOSPITAL: And how many years did you serve your residency at (INSERT HOSPITAL)? (RECORD BELOW)

Hospital	City/Town	State	Number of Years

5. A. In what year did you start private practice in this (city/town)? 19________

B. In what year did you start private practice altogether? 19________

IF "A" & "B" ARE THE SAME YEAR, SKIP TO Q. 6.

C. And in what towns and states did you practice before you came here?

D. ASK FOR EACH CITY OR TOWN: And during what years did you practice in (INSERT CITY OR TOWN)? (TREAT ARMY SERVICE, IF OFFERED, AS ONE CITY)

City/Town	State	From:	To:
		19____	19____
		19____	19____
		19____	19____

6. Thinking about (INSERT NAME OF TOWN OR COUNTY WHERE DR'S OFFICE LOCATED) -- Would you say that this area is an excellent place to practice medicine, a very good place, fairly good, or not so good?

Excellent
Very good
Fairly good
Not so good
Don't know

7. A. What advantages does this area offer as a place to practice medicine?

B. What drawbacks does it have as a place to practice medicine?

8. In general, would you say that most doctors serving this area are excellent physicians, very good physicians, fairly good, or not so good?

Excellent
Very good
Fairly good
Not so good
Don't know
R is only Dr. in area (SKIP TO Q. 10)

9. How about the relationships among colleagues in this area -- Would you say they are excellent, very good, fairly good, or not so good?

Excellent
Very good
Fairly good
Not so good
Don't know
R is only Dr. in area

---

10. A. Would you say that keeping abreast of medical developments is easier or harder for a man practicing in (CITY OR COUNTY WHERE DR'S OFFICE LOCATED) than elsewhere?

Easier here (ASK B)
Harder here (ASK B)
Same
Don't know

IF "EASIER" OR "HARDER," ASK B

B. In what way?

---

11. A. Supposing you wanted to ask another doctor for information and advice about some recent medical development -- whom would you be most likely to ask? (PROBE FOR NAME)

B. IF "IT DEPENDS ON FIELD" TO A: Let's say it's a matter of internal medicine -- whom would you be most likely to ask? (PROBE FOR NAME)

Now, Doctor, let me turn from the local situation to the problem of keeping up with new medical developments generally --

12. First, from the private practitioner's point of view, does keeping up present a major burden, a heavy burden, just one burden among many, or not much of a burden at all?

Major burden
Heavy burden
One among many
Not much of a burden
Don't know

13. Second, there is always a certain lag between available scientific knowledge and the average practitioner's familiarity with it. In your opinion does this lag affect medical care seriously, just somewhat, or not at all?

Seriously
Just somewhat
Not at all
Don't know

---

14. Some sources say that harmful use is made of new methods and medications due to incomplete information on the practitioner's part. In your opinion does that happen frequently, occasionally, or hardly ever?

Frequently
Occasionally
Hardly ever
Never
Don't know

---

15. By and large, do you feel that medical practitioners are showing enough concern with keeping up, or not enough concern?

Enough
Not enough
Don't know

---

16. And how about the professional organizations and medical schools -- Would you say they are showing enough concern with keeping up and continuing education, or not enough?

Enough
Not enough
Don't know

---

17. A. In your opinion are there any medical organizations or schools that have exaggerated the matter of keeping up and continuing education?

Yes (ASK B)
No
Don't know

IF YES, ASK B

B. In what way has this concern been exaggerated?

18. A. In your opinion, should anything (more) be done either to keep doctors better informed, or to make keeping up less time consuming?

Yes
No
Don't know

IF YES TO A, ASK B

B. What should be done?

ASK Q. 18-C THROUGH G IF NOT MENTIONED IN RESPONSE TO Q. 18-A AND B

C. Of course there are already such a great number of medical journals, but do you think that different kinds of journals or books are needed? (IF YES: What kinds?)

D. There are quite a few meetings and postgraduate programs now, but do you think that different kinds are needed? (IF YES: What kinds?)

E. Do you think there is a need for different kinds of library facilities, question-and-answer services, or the like? (IF YES: What kinds?)

F. In order to keep doctors more abreast, do you think anything should be done in connection with specialization, joint practice, hospital appointments, and so on? (IF YES: What do you have in mind?)

G. Is there anything that should be done in the county societies or community hospitals to keep more doctors abreast of medical developments? (IF YES: What?)

19. A. I would like to ask you to estimate to what extent you actually manage to keep up with medical developments yourself. Let's say the number 10 represents an ideal practitioner who manages to keep up with everything that is relevant to his practice, and the "one" represents a doctor who is pretty rusty.

Where would you place yourself on such a scale? ____________

Don't know

B. And where would you place the average doctor in (NAME OF THIS CITY OR COUNTY)on such a scale -- a scale of keeping up with whatever is relevant to each man's practice?

__________(SKIP TO E)

Can't answer for G.P.s and
Specialists combined (ASK C & D)
Don't know (SKIP TO E)

IF "CAN'T ANSWER FOR G.P.s AND SPECIALISTS COMBINED," ASK C & D

C. Where on this scale would you place the average general practitioner here? __________

Don't know

D. And where would you place the average internist here?

____

Don't know

E. Which cities in the (THIS REGION) would you say offer the best medical care to their populations? (PROBE FOR AT LEAST ONE CITY - DO NOT PROBE FOR ANY OTHERS)

__________________ ______________ ______________

Don't know (SKIP TO Q. 20)

IF ONLY R's CURRENT CITY IS NAMED, SKIP TO Q. 20.

F. Where would you place the average (doctor) (IF "D" WAS ASKED, SAY: internist) in a place like (CITY(IES) NAMED IN "E") on the one to ten scale of keeping up with whatever is relevant to each man's practice?

____

Don't know

In order to get a more concrete picture of the way practitioners copy with the problem of keeping abreast, our study focuses on some specific medical subjects.

20. A. One of these has to do with the treatment of rheumatoid arthritis.

How often does rheumatoid arthritis come up in your practice -- Do you deal with it almost daily, once every week or two, a few times a year, or never.

Almost daily
Every week or two
A few times a year
Other (Specify)
Never

B. How often do you deal with allergic conditions -- Is it almost daily, once every week or two, a few times a year, or never?

Almost daily
Every week or two
A few times a year
Other (Specify)
Never

C. How often do you deal with hypertension in your practice -- almost daily once every week or two, a few times a year, or never?

Almost daily (ASK Q. 21)
Every week or two (ASK Q. 21)
A few times a year (ASK Q. 21)
Other (Specify) (ASK Q. 21)
Never

IF "NEVER" TO ALL THREE (A, B, AND C), SKIP TO Q. 52.

IF "NEVER" TO "C" (Hypertension), SKIP TO Q. 28, IF DOCTOR NEVER DEALS WITH HYPERTENSION (Q.20-C) SKIP TO Q.28

BEFORE ASKING Q21, OPEN THE FOLD-OUT

21. A. Suppose you had a question about recent developments in the management of hypertension, where would you go for an answer?

IF A LIBRARY IS MENTIONED IN A, ASK B

B. How would you search for information at the library -- Would you look up hypertension in the card file, or what?

IF OTHER PLACES OR ORGANIZATIONS MENTIONED IN A, ASK "C" FOR EACH

C. Just how would you go about making an inquiry at ____?

ANSWER ITEMS 1, 2 AND 3 ON THE FOLD OUT

IF DOCTOR(S) NAME(S) MENTIONED ON THIS PAGE, SKIP NOW TO Q. 23.

IF DOCTOR(S) DESIGNATED (e.g., "THE CHIEF OF MEDICINE," "A DOCTOR AT THE HOSPITAL") BUT NO NAME GIVEN, SKIP TO Q. 22-B.

IF NO DOCTOR(S) DESIGNATED, ASK Q. 22-A

The following questions, addressed to the interviewees, appeared on a fold-out which remained exposed during Q. 21-34.

HYPERTENSION

(1) FROM Q.21

Was a specific book or journal (other than Index Medicus) named on page 10?

Yes X
No . . . . Y

(2) FROM Q. 21

Was any source other than doctors, books and journals, or a local library named on Page 10?

Yes X
No . . . . Y

(3) FROM Q. 21-23

List any names of doctors mentioned on Pages 10 and 11:

______

______

______

STEROIDS

(4) FROM Q. 28

Was a specific book or journal (other than "Index Medicus) named on Page 14?

Yes X
No . . . . Y

(5) FROM Q. 28

Was any source other than doctors, books and journals, or a local library named on Page 14?

Yes X
No . . . . Y

22. A. If you wanted to ask another doctor about recent developments in the management of hypertension, whom would you be most likely to ask? (RECORD VERBATIM, THEN CODE)

Actual name(s) given (SKIP TO Q. 23)
Dr(s) designated, no name (ASK B)
Would never ask another Dr. (SKIP TO Q. 25)
Would ask, cannot say whom (SKIP TO Q.24)

IF DOCTOR DESIGNATED, NO NAME, ASK B

B. What is his name? (What is the name of a doctor you would most likely ask?)

IF ACTUAL NAME(S) GIVEN, ASK Q. 23.

IF NO NAME GIVEN, SKIP TO Q. 24.

---

23. A. IF MORE THAN ONE NAME GIVEN IN Qs. 21-22: Who would it be most often?

---

23. B. Does Dr. (ONLY DOCTOR NAMED or DOCTOR ASKED MOST OFTEN) have a special field of interest?

Yes (ASK C)
No
Don't know

IF YES TO "B," ASK C

C. What field is it?

D. Is he someone you talk shop with in the ordinary week?

Yes
No
Don't know

LIST UNDER ITEM 3 OF THE FOLD-OUT, ALL DOCTOR NAMES GIVEN ON Q.21-23.

[THE FOLD-OUT TEXT IS REPRODUCED ON p. B-10]

24. A. Have you actually had any occasion to go to any of your colleagues with questions about hypertension in the past 12 months?

Yes (ASK B)
No
Don't remember

IF YES, ASK B

B. About how many times in the last 12 months? (Just your best estimate) _____times in last 12 months

---

REFER TO ITEM "1" OF THE FOLD OUT. IF CODE "X" IS CIRCLED (A SPECIFIC BOOK OR JOURNAL MENTIONED), SKIP TO Q. 26.
(THE FOLD-OUT TEXT IS REPRODUCED ON PAGE B-10.)
IF CODE "Y" IS CIRCLED, ASK QUESTION 25.

25. A. Suppose you wanted to look up something about recent developments in the management of hypertension in the literature -- Where would you look?

IF A LIBRARY IS MENTIONED IN Q. 25-A, ASK B IF NOT ALREADY ANSWERED

B. How would you search for the information at the library -- Would you look up hypertension in the card file or what?

IF A SPECIFIC BOOK OR JOURNAL (BESIDES "INDEX MEDICUS") IS GIVEN, SKIP TO Q. 26.

IF NO SPECIFIC BOOK OR JOURNAL (BESIDES "INDEX MEDICUS") IS GIVEN, ASK C.

C. Can you think of a specific book or journal where you might look?

Yes (ASK D)
No

IF YES TO "C," ASK D

D. Which one?

26. A. Have you actually had any occasion to look up something about the management of hypertension anywhere in the literature in the past 12 months?

Yes (ASK B)
No
Don't remember

IF YES, ASK B

B. About how many times in the past 12 months? (Just your best estimate) _____times in last 12 months

---

REFER TO ITEM "2" OF THE FOLD OUT. IF CODE Y IS CIRCLED (DOCTOR DID NOT MENTION SOURCES OTHER THAN DOCTORS, JOURNALS & BOOKS, AND LOCAL LIBRARIES), SKIP TO Q. 28.
(THE FOLD-OUT TEXT IS REPRODUCED ON PAGE B-10.)
IF CODE X IS CIRCLED, ASK QUESTION 27, INSERTING EACH "OTHER SOURCE MENTIONED IN Q. 21.

27. A. You mentioned that you would turn to (NAME OF COURSE). Have you actually made inquiries about hypertension at (NAME OF SOURCE) during the past 12 months? (CODE BELOW)

B. IF "YES" TO A: About how many times in the past 12 months? (Just your best estimate) (RECORD BELOW)

WHITE IN NAME OF SOURCE	ACTUALLY MADE INQUIRY	TIMES IN LAST 12 MONTHS
	Yes (ASK B) No Don't know	
	Yes (ASK B) No Don't know	
	Yes (ASK B) No Don't know	
	YES (ASK B) No Don't know	

IN FOUR OF THE COUNTIES, Q.28-34 (STEROIDS) WERE ASKED BEFORE Q. 21-27 (HYPERTENSION).

IF DOCTOR DEALS WITH NEITHER RHEUMATOID ARTHRITIS NOR ALLERGIES (Qs. 20-A&B) SKIP TO Q. 43.

IF DOCTOR EVER DEALS WITH EITHER OF THESE CONDITIONS, ASK Q. 28-34.

OPEN FOLD-OUT BEFORE ASKING THIS QUESTION

28. A. Suppose (that instead of hypertension) you had a question about recent developments in the use of steroids, where would you go for an answer in that case?

IF "WOULD GO TO SAME DOCTORS AS IN HYPERTENSION", ASK B

B. Do you mean Dr.(s) (READ NAMES LISTED IN ITEM 3 OF FOLD OUT)? (RECORD VERBATIM)

IF LIBRARY IS MENTIONED IN A, ASK C

C. How would you search for information at the library -- Would you look up steroids in the card file, or what?

IF OTHER PLACES OR ORGANIZATIONS MENTIONED IN A, ASK D FOR EACH

D. Just how would you go about making an inquiry at ______?

ANSWER ITEMS 4 AND 5 ON THE FOLD OUT

(THE FOLD-OUT TEXT IS REPRODUCED ON PAGE B-10.)

IF ANY DOCTOR'S NAME RESULTS FROM THIS PAGE, SKIP NOW TO Q. 30.

IF DOCTOR(S) DESIGNATED BUT NO NAME GIVEN, SKIP TO Q. 29-C.

IF NO DOCTOR DESIGNATED, ASK Q. 29-A.

29. A. If you wanted to ask another doctor about recent developments in the use of steroids, whom would you be most likely to ask? (RECORD VERBATIM AND CODE UNDER B)

IF "WOULD ASK THE SAME DOCTOR(S) AS IN HYPERTENSION", ASK B

B. Do you mean Dr.(s) (READ NAMES LISTED IN ITEM 3 OF FOLD OUT)? (RECORD VERBATIM)

Actual name(s) result (SKIP TO Q. 30)
Doctor(s) designated, no name (ASK C)
Would never ask another doctor (SKIP TO Q. 32)
Would ask, cannot say whom (SKIP TO Q. 31)

C. What is his name? (What is the name of a doctor you would most likely ask?)

IF NAME(S) RESULT, ASK Q. 30.

IF NO NAME RESULTS, SKIP TO Q. 31.

---

30. A. IF MORE THAN ONE NAME RESULTS IN Qs. 28-29: Who would it be most often for steroids?

---

30. B. IF THE ONLY DOCTOR NAMED, OR THE DOCTOR ASKED MOST OFTEN IS LISTED ON THE FOLD OUT, SKIP TO Q. 31. OTHERWISE ASK:

Does Dr. (only doctor named or doctor asked most often) have a special field of interest?

Yes (ASK C)
No
Don't know

IF YES TO "B", ASK C

C. What field is it?

D. Is he someone you talk shop in the ordinary week?

Yes
No
Don't know

31. A. Have you actually had any occasion to go to any of your colleagues with questions about the use of steroids in the past 12 months?

Yes (ASK B)
No
Don't remember

IF YES, ASK B

B. About how many times in the last 12 months? (Just your best estimate) ____times in last 12 months

---

REFER TO ITEM 4 OF THE FOLD OUT. IF CODE "X" IS CIRCLED (A SPECIFIC BOOK OR JOURNAL MENTIONED), SKIP TO Q. 33.
(THE FOLD-OUT TEXT IS REPRODUCED ON PAGE B-10.)
IF CODE Y IS CIRCLED, ASK Q. 32.

32. A. Suppose you wanted to look up something about recent developments in the use of steroids in the literature, where would you look?

IF A LIBRARY IS MENTIONED IN A, ASK B IF NOT ALREADY ANSWERED

B. How would you search for the information at the library -- Would you look up steroids in the card file, or what?

IF A SPECIFIC BOOK OR JOURNAL (BESIDES "INDEX MEDICUS") IS GIVEN, SKIP TO Q.33.
IF NO SPECIFIC BOOK OR JOURNAL (BESIDES "INDEX MEDICUS") IS GIVEN, ASK C.

C. Can you think of a specific book or journal where you might look?

Yes (ASK D)
No

IF YES TO "C", ASK D

D. Which one? (Any others?)

33. A. Have you actually had any occasion to look up something about the use of steroids anywhere in the literature in the past 12 months?

Yes
No
Don't remember

IF YES, ASK B

B. About how many times in the past 12 months? (Just your best estimate) ___times in last 12 months

---

REFER TO ITEM 5 ON THE FOLD OUT. IF CODE "Y" IS CIRCLED (DOCTOR DID NOT MENTION SOURCES OTHER THAN DOCTORS, JOURNALS & BOOKS, AND LOCAL LIBRARIES), SKIP TO Q. 36.
(THE FOLD-OUT TEXT IS REPRODUCED ON PAGE B-10.)
IF CODE "X" IS CIRCLED, ASK QUESTION 34 INSERTING EACH "OTHER" SOURCE IN Q. 28.

34. A. You mentioned that you would turn to (NAME OF SOURCE). Have you actually made inquiries about the use of steroids at (NAME OF SOURCE) during the past 12 months? (CODE BELOW)

B. IF "YES" TO A: About how many times in the past 12 months? (Just your best estimate)

WRITE IN NAME OF SOURCE	ACTUALLY MADE INQUIRY	TIMES IN LAST 12 MONTHS
	Yes (ASK B). . . . 1 No . . . . 2 Don't know 3	
	Yes (ASK B). . . . 1 No . . . . 2 Don't know 3	
	Yes (ASK B). . . . 1 No . . . . 2 Don't know 3	
	Yes (ASK B). . . . 1 No . . . . 2 Don't know 3	

---

35. This question omitted intentionally.

Note to Questions 36-62

Most of Questions 36-62 constitute the information test and are reproduced in Appendix A. Only those questions from this sequence are reproduced here which are intended to serve other purposes in addition to, or instead of, that of information scoring. Questions 36-42 (steroids), 43-51 (hypertention), and 53-62 (bacterial infections) were skipped in interviews with physians who had indicated that they never dealt with rheumatoid arthritis, hypertentions, or infectious disease, respectively.

36. Now let us think of a specific situation -- A patient with rheumatoid arthritis who has never received steroid treatment. What should be done to help such a patient over an aggravated state of his arthritis? (DO NOT PROBE FOR "WHAT ELSE SHOULD BE DONE?")

NAMES OF STEROIDS ARE:

Cortisone, Hydrocortisone, Prednisone, Prenisolone, Aristocort, Compound E, Compound F, Dexamethasone, Decardron, Deronil, Triaminolone.

37. IF NO MENTION OF STEROIDS SO FAR: Would steroids be appropriate to help a patient over an acute state of rheumatoid arthritis? (RECORD ALL COMMENTS)

Yes
No
Don't know

* *

42.B. All told, about how many new prescriptions for steroids have you written in the past 30 days?

____
Won't say, Don't know.

42. C. (In addition to these) do you have any (other patients on continuing steroid treatment at the present time?
(IF YES: How many patients?)

____

No one
Won't say, don't know

* * * * * * * * * * * * * * * * * * * *

50. Now please think of a case of moderate but consistent hypertension newly discovered in a 35 year old man. He has no particular complaints connected with his high blood pressure, and shows no obvious signs of underlying organic diseases.

IF "What do you mean by 'moderate hypertension'?"
SAY: Let's say 180 or 110.

A. Would you recommend doing a urinalysis in such a case?

Yes
Sometimes, usually, probably
No
Don't know

B. Would you recommend doing any of the following tests in such a case of moderate hypertension without special complaints -- blood electrolyte and B.U.N. test, urinary V.M.A., or intravenous regitine test?

Yes, would do at least one of these (SKIP TO D)
No, none of these (SKIP TO 1)
It depends (ASK C)
Don't know (SKIP REMAINDER OF Q. 50)

IF "IT DEPENDS" TO B, ASK C
C. What does it depend on?

D. If these tests didn't turn up anything special, would you recommend doing an I.V.P. or Renogram in such a case of moderate hypertension without special complaints?

Yes, would do at least one of these (ASK F)
No, none of these (SKIP TO H & I)
It depends (ASK E)
Don't know (SKIP TO H & I)

IF "IT DEPENDS" TO D, ASK E

E. What does it depend on?

F. And finally, would you recommend doing an Aortogram or split renal function test in such a case if the previous tests didn't turn up anything special?

Yes, would do at least one of these (SKIP TO H & I)
No, none of these (SKIP TO H & I)
It depends (ASK G, THEN H & I)
Don't know (SKIP TO H & I)

IF "IT DEPENDS" TO F, ASK G

G. What does it depend on?

H. As far as you know, are there reputable experts who would find your way of handling such a situation too drastic?

Yes
No
Don't know

I. As far as you know, are there reputable experts who would insist on more aggressive handling of such a situation?

Yes
No
Don't know

* * * * * * * * * * * * * * * * * * * *

52. (The last medical subject is that of infectious diseases.) How often do you deal with infectious disease -- Is it almost daily, once every week or two, a few times a year, or never?

Almost daily
Every week or two
Few times a year
Other (Specify)
Never (SKIP TO Q. 63)

---

53. A. In diagnosing infections, laboratory cultures are sometimes indicated. Have you had any occasion to send a sputum specimen to the lab for culture during the past month?

Yes (ASK B)
No (SKIP TO Q. 54).
Not sure (SKIP TO Q. 54).

IF YES, ASK B

B. About how many sputum specimens have you sent to the lab for culture during the past month?

____
Don't know

---

54. A. Have you had any occasion to send a urine specimen to the lab for culture during the past month?

Yes (ASK B)
No (SKIP TO Q. 55)
Not sure (SKIP TO Q. 55)

IF YES, ASK B

B. About how many urine specimens have you sent to the lab for culture during the past month?

____
Don't know

* *

62. A. Do you recall the names of any new antibiotics that have been released since last summer?

Yes (ASK B)
No (ASK D)
Don't know (ASK D)

IF YES, ASK B

B. What ones do you recall?

C. IF NO MENTION OF KEFLIN OR CEPHALOTIN: Have you heard of Keflin or Cephalotin?

Yes (ASK D)
No (SKIP TO Q. 63)
Not sure, Don't know (SKIP TO Q. 63)

62. D. Have you ever used Keflin or Cephalotin?

Yes (ASK E)
No

E. IF EVER USED KEFLIN OR CEPHALOTIN: When was the first time you used it -- was it during (READ CATEGORIES --)

February (or March) of this year?
January 1965?
December 1964?
November 1964?
Or before November 1964?
Don't know, Don't remember.

Time:________

63. A. Do you have a hospital affiliation? Yes (ASK B-H)
No (SKIP TO Q. 64)

IF YES, ASK B-H for EACH

B. With what hospital? (RECORD BELOW AS MANY AS GIVEN. DO NOT PROBE FOR OTHERS)

C. In what city? (RECORD BELOW)

D. IF MORE THAN ONE HOSPITAL: Which hospital do you regard as your home base? (CHECK OFF BELOW OR CODE --
Cannot choose home base.

IF DOCTOR CANNOT DECIDE WHICH ONE IS HOME BASE:

D-1. At which one do you spend the most time?

________________________(CONSIDER THIS HOME BASE)

B. NAME OF HOSPITAL	C. CITY	D. or D-1 HOME BASE (Check one)

ASK E-H OF EVERYONE WITH AT LEAST ONE HOSPITAL AFFILIATION

E. About how many hours a week do you spend at (ONLY HOSPITAL OR HOME BASE HOSPITAL)? _______hours per week

F. About how many hours a week do you spend at all hospitals combined? _______hours per week

G. What is your title at (ONLY HOSPITAL OR HOME BASE HOSPITAL)?

H. Do you regularly attend any clinical conferences, grand rounds, or the like at the hospital(s)? Yes
No

64. A. In the past three years, have you been able to take any special courses or post-graduate training, apart from occasional lectures or meetings?

Yes (ASK B-E)
No (SKIP TO Q. 65)

IF YES, ASK B-E

B. What was the name of the course? (RECORD BELOW AS MANY AS GIVEN. DO NOT PROBE FOR ANY OTHERS)

C. What organization sponsored it? (RECORD BELOW)

D. In what city was it held? (RECORD BELOW)

B. NAME OF COURSE	C. SPONSORING ORGANIZATION	D. CITY

E. About how many hours altogether did you spend in such courses in the past three years -- Was it less than 50 hours, between 50 and 70 hours, or more than 70 hours?

Less than 50 hours
50 - 70 hours
More than 70 hours
Don't know

---

65. A. Have you attended any meetings of your county medical society in the last twelve months?

Yes (ASK B)
No

IF YES, ASK B

B. About how many did you attend in the last 12 months? ________ in last 12 months

66. A. Have you attended any other meetings of professional societies in the last 12 months?

Yes (ASK B-F)
No (SKIP TO Q. 67)

IF YES, ASK B-F

B. Which society meetings? (RECORD BELOW AS MANY AS GIVEN. DO NOT PROBE FOR ANY OTHERS)

C. In what city was that held? (RECORD BELOW FOR EACH)

D. Is this an annual meeting? (RECORD BELOW FOR EACH)

E. IF NO TO D: How often did you attend the meetings of this society in the last twelve months?

B. Society	C. City	D. Annual meeting?	E. How often attended?
		Yes No (ASK E)	
		Yes No (ASK E)	
		Yes No (ASK E)	
		Yes No (ASK E)	

F. Did you present a paper at any of these meetings?

Yes
No

---

67. A. Have you attended any medical lectures in the past 12 months aside from what you told me so far?

Yes (ASK B)
No

IF YES, ASK B

B. About how many such lectures have you attended in the past 12 months? ____________in last 12 months

68. A. Have you listened to any medical TV or radio programs or telephone bulletins in the past 12 months?

Yes (ASK B)
No
Don't know, Don't remember

IF YES, ASK B

B. What organization put it out? (What program (bulletin) was that?) (RECORD BELOW)

C. Have you used any medical tape recordings, disc, or similar subscription service in the past 12 months?

Yes (ASK D)
No
Don't know, Don't remember

IF YES TO C, ASK D

D. What organization put that out? (What was the name of the service?) (RECORD BELOW)

ASK E & F FOR EACH PROGRAM OR SERVICE MENTIONED

E. How often have you (used the service) (listened to the program) in the past 12 months? (RECORD BELOW)

F. Did you find the program (service) very useful, moderately useful, or not very useful? (RECORD BELOW)

ORGANIZATION OR PROGRAM	IF UNCLEAR, ASK:	HOW OFTEN	HOW USEFUL
	What kind of service? TV . . . . Radio. . . . . Tape . . . . Disc . . . . Other (Specify). . .		Very . . . . . Moderately . . Not very . . . Don't know . .
	What kinw of service? TV . . . . Radio. . . . . Tape . . . . Disc . . . . Other (Specify). . .		
	What kind of service? TV Radio Tape Disc Other (Specify)		Very. . . . . . Moderately. . . Not very. . . . . Don't know. . .

69. A. During the past 12 months, did you get a chance to drop in at any hospitals or medical centers in other cities to talk shop or see what is going on?

Yes (ASK B-D)
No (SKIP TO Q. 70)

IF YES, ASK B - D

B. What hospitals or medical centers? RECORD BELOW. DO NOT PROBE FOR ANY OTHERS)

C. In what city and state? (RECORD BELOW)

D. About how often were you there during the past 12 months (RECORD BELOW)

B. NAME OF HOSPITAL OR MEDICAL CENTER	C. CITY AND STATE	D. HOW OFTEN?

70. And back here in (NAME OF DOCTOR'S OWN CITY OR COUNTY), who are the three physicians with whom you most often find yourself taking shop in the course of an ordinary week? (PROBE FOR NAMES)

Dr. ____________________

Dr. ____________________

Dr. ____________________

71. A. Which one of the following is most helpful in learning more medicine -- daily contact with local colleagues, keeping in touch with able practitioners in cities with better facilities, or paying attention to the clinical researchers from the top institutions? (RECORD BELOW)

B. Which method would rank second in helping the physician learn more medicine? (RECORD BELOW)

	A. First Choice	B. Second Choice
Local colleagues.	1	2
Practitioners in other cities . . .	1	2
Researchers from top institutions .	1	2
Don't know.	4	5

72. A. Do you subscribe to any medical journals? Yes (ASK B)
No (ASK C)

IF YES, ASK B

B. What are their names? (DO NOT READ LIST TO DOCTOR; CODE BELOW OR ADD TO LIST AND CIRCLE UNDER B: INCLUDE ANY SUBSCRIBED TO BY PARTNER, IF OFFERED.)

C. Are there any (other) medical journals that you see regularly?

IF YES TO C, ASK D

Yes (ASK D)
No (SKIP TO Q.73)

D. Which ones? (DO NOT READ LIST TO DOCTOR; CODE BELOW OR ADD TO LIST AND CIRCLE UNDER D. DO NOT PROBE FOR ANY OTHERS)

	B Subscribes	D Sees Regularly
Journal of the A.M.A. (J A M A).	1	1
American Journal of Medicine	2	2
Annals of Internal Medicine.	3	3
Archives of Internal Medicine.	4	4
Circulation (American Heart Association Journal)	5	5
Current Medical Digest	6	6
G. P. (American Academy of General Practice)	7	7
Indiana State Medical Assoc. Journal . .	8	8
M. D.	9	9
Medical Economics	1	1
Medical Letter	2	2
Modern Medicine	3	3
New England Journal of Medicine	4	4
Pennsylvania Medical Journal	5	5
Postgraduate Medicine (P. G. Medicine). .	6	6
Wisconsin Medical Journal	7	7
______________________	1	2
______________________	1	2
______________________	1	2
______________________	1	2
______________________	1	2
______________________	1	2

73. How many journals do you suppose the average internist in (NAME OF THIS CITY OR COUNTY) sees regularly? (Just your best estimate.) ______________

---

74. Please tell me if you see each of these periodicals regularly (READ LIST TO DOCTOR) --

	See Regularly Yes	See Regularly No	Volunteered Comments
Medical Times?	1	2	______________
Medical Tribune?	1	2	______________
Current Medical Digest?.	1	2	______________
Modern Medicine?	1	2	______________

---

75. What is your opinion of the information in the pharmaceutical company house organs -- Can it usually be accepted as it stands, or accepted with a grain of salt, or only after careful scrutiny, or not at all?

Accepted as it stands
Accepted with a grain of salt
Only after careful scrutiny
Not al all
Don't know

---

76. How about the pharmaceutical ads in the medical journals -- Would you say their information can usually be accepted as it stands, or accepted with a gain of salt, or only after careful scrutiny, or not at all?

Accepted as it stands
Accepted with a grain of salt
Only after careful scrutiny
Not at all
Don't know

---

77. A. Do you know the Medical Letter?

Yes (ASK B)
No

IF YES, ASK B

B. What do you think of it?

78. Supposing it were possible to publish a volume once a year containing all those articles from professional journals which are really relevant to your practice -- and containing nothing else.

Would you rather rely on such a volume once a year, or sift through the journals as they are from month to month?

Volume every year
Journals every month
Don't know

---

79. What percentage of all the new drugs that are advertised each year would you say constitute genuine advances? (IF ASKED: "What do you mena - new?" SAY: "Any drugs that are advertised as new.")

_______________%

---

80. Besides drugs -- how about all the other innovations in diagnosis and therapy that are announced year year -- What percentage of these constitute genuine advances?

_______________%

81. A. Have you ever had an article published in a medical journal yourself?

Yes (ASK B & C)
No (SKIP TO Q. 82)

IF YES, ASK B&C

B. Was it (Were any of them) based on clinical or experimental research?

Yes
No

C. When was the last time you published an article? 19________

82. A. In recent years, have you been an officer or committee chairman in any professional society -- local, state, or national?

Yes (ASK B)
No

IF YES, ASK B

B. Which was it -- local, state or national? (CIRCLE ALL THAT APPLY)

Local or county (INCLUDES LOCAL CHAPTER OF NATIONAL SOCIETY)

State or regional

National

83. A. Do you have any duties in connection with a medical school?

Yes (ASK B - D)
No

IF YES, ASK B-D

B. Which schools (RECORD BELOW. DO NOT PROBE FOR ANY OTHERS)
C. What is your position there?
D. About how much time do you devote to (NAME OF SCHOOL) in a year?

SCHOOLS	POSITIONS	TIME SPENT

---

84. A. About how many office visits per week do you have around this time of year?

_______________ per week

B. About how many new cases of bronchitis and pneumonia did you see during the past month? (RECORD SINGLY OR COMBINED -- AS OFFERED)

______ bronchitis ___________ pneumonia

______ bronchitis & pneumonia

Don't know . . . . .

C. And about how many new cases of urinary tract infections did you see during the past month?

_______________ past month

Don't know . . . .

---

85. A. About what percent of your private patients are under the age of 18? (Just your best estimate.)

__________%
Dont' know

B. About what percent of your private patients would you estimate have attended college?

__________%
Don't know

---

86. A. Sometimes patients express their own ideas of what the doctor should do for them. In your experience, does that happen quite often, occasionally, hardly ever, or never?

Quite often (ASK B)
Occasionally (ASK B)
Hardly ever
Never
Don't know

IF QUITE OFTEN OR OCCASIONALLY, ASK B

B. When it does happen, does it take much of your time and attention to cope with it, just some time and attention, or hardly any at all?

Much time & attention
Some time & attention
Hardly any
Don't know

87. What is your standard fee for an office visit?

$__________

Won't say

Now I would like to ask you about your activities outside of working hours.

88. Would you think for a moment of the three friends whom you see most often socially --(PAUSE) -- How many of them are doctors?

None
One
Two
All three
Don't know

---

89. About what percentage of your free time do you spend in the company of other doctors?

__________%

Before finishing up, I'll ask for some of your thoughts about being a doctor.

90. A. Suppose you had not gone into (internal medicine)(general practice) -- which of these would you most like to be -- an obstetrician, a psychiatrist, or a full time researcher? (RECORD BELOW)

B. Which would be your next choice?

	A First Choice	B Second Choice
Obstetrician	1	2
psychiatrist	1	2
Full time researcher	1	2
Don't know.	5	6

---

91 We realize it is hard to generalize, but who, in your opinion, makes the greater contribution to the health of the American public -- the researchers in basic medical science, the clinical investigators, or the private physicians who actually care for patients?

Researchers in basic science
Clinical investigators
Private physicians
Don't know

92. **TELEPHONE INTERVIEW:** I am going to read pairs of traits of a good physician. All are important, but would you tell me which trait in each pair is most in need of greater emphasis than it receives at present. (READ EACH PAIR OF ALTERNATIVES TO DOCTOR)

FACE-TO-FACE INTERVIEW: (HAND DOCTOR BUFF CARD) This card has pairs of traits of a good physician. All are important, but would you tell me which trait in each pair is more in need of greater emphasis than it receives at present.

A. Reliance on diagnosis from clinical signs
or, Familiarity with all important diagnostic tests?
Impossible to choose.

B. Applying prompt treatment to cover all serious eventualities
or, Withholding treatment until conclusive diagnosis is in?
Impossible to chose.

C. Affording their patients the latest treatment that has been tested.
or, Making sure to follow only practices which have been tried over a long period of time?
Impossible to choose.

D. Allowing the healing powers of nature to do their work.
or, Taking all active steps that might be of help to the patient?
Impossible to choose.

E. Acquiring additional technical skills.
or, Developing skill in dealing with the patient's social and psychological problems?
Impossible to choose.

IF FACE-TO-FACE INTERVIEW, SKIP TO Q. 96.

IF TELEPHONE INTERVIEW, ASK QUESTIONS 93- 95.

93. A. If a physician could somehow have an eighth day in the week, would he do most good for the community by spending the extra time seeing more patients, spending more time with the patients he has, reading and attending lectures, or giving more time to ward and clinic service? (RECORD BELOW)

B. Which would be the next best way to spend the time? (RECORD BELOW)

C. And the third best way?

	A. First Choice	B. Second Choice	C. Third Choice
Seeing more patients.	1	2	3
More time with patients he has. .	1	2	3
Reading and attending lectures. .	1	2	3
Ward and clinic service.	1	2	3
Don't know.	5	6	
	(GO TO 94)	(GO TO 94)	

---

94. A. Which of these is the most important way in which colleagues can help one another give better service -- by making expert referrals available, or by pooling what they hear and read of new methods or by pooling their own judgement in informal consultations? (RECORD BELOW)

B. Which is the next most important way?

	A. Most Important	B. Next Most Important
Making expert referrals available. . . .	1	2
Pooling what they hear and read of methods.	1	2
Pooling their own judgement in informal consultations	1	2
Don't know.	4 (GO TO 95)	5

---

95. A. Membership in a good hospital enables a doctor to render better care to his patients. Which of these is the chief reason -- first, he can admit his patients to the hospital; second, he learns better medicine from contacts with colleagues at the hospital; or third, he is kept on his toes by practicing in a more public setting? (RECORD BELOW)

B. Which would be the second most important reason?

	A. Chief Reason	Second Reason
Can admit his patients	1	2
Learns better medicine from colleagues	1	2
Practicing in a more public setting	1	2
Don't know	4 (SKIP TO 97)	5

IF FACE-TO-FACE INTERVIEW, ASK QUESTION 96

96. (HAND DOCTOR WHITE CARD) I am going to ask you to rank some statements --

A. Suppose a physician could somehow have an eight day in the week. Under "A" are several activities in which he might spend the extra time. Please call them off in the order in which they would do the most good for the community. (RECORD 1, 2, 3, or 4 NEXT TO ITEM IN THE ORDER IT IS OFFERED)

Seeing more patients. . . . . _______

Spending more time with the patients he has . _______

Reading up and attending lectures . . . . . . _______

Giving more time to ward and clinic service . _______

Can't decide 5

B. Under "B" are listed several ways in which colleagues can help one another give better service. Please call them off to me in the order of their importance. (RECORD 1, 2, or 3 NEXT TO ITEM IN ORDER IT IS OFFERED)

Making expert referrals available . . . . . . ______

Pooling what they read and hear of new methods ______

Pooling their own judgement in informal consultations . . . . ______

Can't decide 4

C. Under "C" are listed several reasons why membership in a good hospital enables a doctor to render better care to his patients. Please call them off in the order of their importance. (RECORD 1, 2, or 3 NEXT TO ITEM IN THE ORDER IT IS OFFERED)

That he can admit his patients to the hospital . . _____

That he learns better medicine from contacts with colleagues in the hospital . . . . _____

That he is kept on his toes by practicing medicine in a more public setting . . . . _____

Can't decide 4

ASK EVERYONE --

My last questions are for statistical comparison.

97. A. Were you born in this country?
Yes (ASK B)
No (ASK C)

B. IF YES: In what country was your father born? ____________

C. IF NO: In what country were you born? ____________

---

98. How big a town did you live in when you were in your teens -- Was it under 25,000 population, between 25,000 and 100,000, or over 100,000? (IF DOCTOR LIVED IN MORE THAN ONE TOWN: How big was the biggest town you lived in during your teens?)

Under 25,000.
25,000 - 100,000.
Over 100,000.
Did not live in a town.
Don't know.

---

99. A. What kind of work did your father do at that time?

B. Was he self-employed or did he work for someone else?

Self-employed.
Worked for someone else.

---

100. In what religion were you brought up?

Jewish.
Protestant
Roman Catholic.
Other (Specify).
None.
Won't say.

---

101. A. This completes the interview, Doctor, Have other doctors told you about some of the questions that we are asking?

Yes (ASK B).
No.
Don't recall.

B. IF YES: Do you think that made any difference to you in the way that you answered? (IF YES: In what way?)

---

102. Do you have any comments you would like to make about the things we have talked about?

Thank you very much.

Time at Completion: ________

INTERVIEWER:

FILL OUT THIS PAGE IMMEDIATELY AFTER INTERVIEW. ESTIMATE ANSWERS FOR PHONE INTERVIEWS

103. IF YES TO Q.2-A AND E: Record the names of other doctors who share R's office.

Can't tell.
Doesn't apply (No to Q.2A or E)

104. Doctor's race:
White
Negro
Other (Specify)
Can't tell

105. Estimate the total number of minutes taken up by major (over 5 mins.) interruptions.

None.

106. How many sittings were required?

IF MORE THAN ONE: At what question number(s) did the extra sitting(s) start?

107. Was the interview conducted--
Face to face.
By Phone.
Began face to face, continued on phone.
Began by phone, continued face to face.

103. Was the interview conducted at --
R's office (includes office in home).
R's home.
Hospital.
Other or mixed (Specify).
Can't tell.

109. Is R's office in --
Business section.
Residential section.
Other (Specify)

110. IF BREAK-OFF: At what question was the interview broken off.

111. Were any questions especially hard for the respondent to answer? (IF ANY: Which? Why?)

112. Were there any questions which you feel did not adequately reflect R's feelings or state of affairs? (IF ANY: Which ones? What made you feel that way?)

113. Did the doctor make any remarks that you grrl er dhoulf know about? (IF YES: What were they? At what question numbers did they occur?)

114. What remarks would you like to make about this interview?

115. Interviewer's Signature:

116. Date of completion:

PHYSICIANS' INFORMATION

APPENDIX C:

SAMPLING

Appendix C

Sampling

This appendix will discuss the selection of locales and the selection of individual physicians for interview within the chosen locales. One additional important aspect of sampling, the sampling of items of medical knowledge for inclusion in the information test used, is discussed elsewhere (Chapter II, pp. 1-7).

Selection of Locales

The study's goals, which emphasized the role of the professional milieu and of colleague-to-colleague contacts in keeping up with developing medical knowledge, dictated the selection of locales according to a number of criteria:

1. It was clear from the start that the sampling would have to be in terms of communities of physicians. Concentration on a relatively small number of communities, and interviews with a very high proportion of practitioners in each covered community, would be necessary. For reasons discussed in Chapter IV (pp. 1-5), "community" in this context was equated with county.

2. Concentration on one or two types of practice (specialties) was deemed necessary. Information requirements obviously differ among medical specialties.

To include several specialties not only would have made it necessary to interview an adequately sized sample of each, but also to construct a separate information test appropriate to the requirements of each specialty, and then to set up equivalencies between the several scores. On the other hand, it was desirable to span several degrees of specialization in the physician's type of practice.

This led naturally to the decision to make the study one of general practitioners and internists, whose areas of requisite medical knowledge overlap extensively, while the degree of specialization differs among them. The study was limited to internists and general practitioners in active private practice; these are termed "eligible M.D." in the following paragraphs.

3. In order to study colleague-to-colleague relations with some intensity it would be necessary to interview a preponderance of the eligible physicians in each chosen county. Only in this way would it be possible adequately to characterize the structure of relationships among physicians in each county, as well as the position of each sampled physician within this structure. It was decided to strive for a sampling ratio of three-quarters of the eligible physicians in each covered county. One exception to this would be made: In order to include the seat of a medical school in the sample, one county would have to be selected with a total physician population so large as to make the three-quarter sampling ratio prohibitive. Here a lower, but still substantial, sampling ratio was to be used.

4. The planned high sampling ratio, together with the ceiling on the total number of interviews imposed by budgetary and other practical constraints, meant that only counties with a moderate total number of physicians could be included. This led to the decision to exclude counties containing cities with populations in excess pf 250,000. Again, a compromise had to be made in order to include the seat of a medical school; counties containing a medical school would be considered even if they contained cities with populations up to 500,000.

5. It was also decided to exclude loclaities that were likely to be medical satellites of localities that had to be excluded according to the above criterion. We did not wish to include a medical community in the study, unless we could also include any nearby communities that were likely to serve as important nodal points in the medical communication network for them.

Criteria 1-5 were embodied in the following formal rules for a preliminary selection of counties, which also exclude counties with extremely few physicians and limit the territory to the Northeastern United States.

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Formal rules for the preliminary selection of counties

Counties were selected from all those in the Eastern and East North Central United States, after the following exclusions:

(a) counties in standard metropolitan statistical areas overlapping beyond the confines of Eastern and East North Central United States;

(b) counties in standard metropolitan statistical areas containing a city of over 250,000 population; except that cities containing a medical school led to exclusion of their county only if they exceeded a population of 500,000;

(c) counties containing fewer than 20 physicians in private practice.

These exclusion rules left a reservoir of 320 counties. Among these counties, a search was then undertaken for sets of counties which would satisfy the following additional criteria.

6. The counties should include several different kinds of medical learning environments, and should therefore have different degrees of access to institutions that are likely to play important roles in the medical learning process, i.e., medical schools and hospitals offering internships. Counties should be included which contained such institutions, others which were located near them, and yet others that were some distance removed from any such institutions.

7. Counties of several of these kinds were to be selected in contiguous sets. This was desired, on the one hand, in order to compare the differential access to medical learning institutions while holding constant economic, cultural, medical-organizational

and other factors associated with a given region or state. On the other hand, the selection of contiguous sets of counties was also deemed important in order to make possible the tracing out of the role that facilities in one county may play by serving, directly or indirectly, as foci of information for doctors in nearby counties.

These criteria were embodied in the following paradigm. ("near" is defined as meaning either "in the same standard metropolitan statistical area" or "within a distance of 50 miles from the county seat.")

The following categories of counties are to be represented:

a. The county contains a medical school;

b. The county does not contain a medical school, but does contain a hopital offering internships, and is near the medical school selected in _a_ above;

c. the county is like that in _b_ above, but is not near any medical school;

d. the county contains neither a medical school nor an internship hospital, but is located near the medical school selected in _a_ above;

e. the county is like that in _d_ above, except that it is not located near any medical school, while being located near one of the internship hospitals selected in _b_ or _c_;

f. the county is like those in _d_ and _e_ abbve, but it is not near any medical school nor near any hospital offering internships.

For each of these categories except the first, counties were to be selected in sufficient numbers and with medical populations of appropriate size so that the planned sampling ratio of three-quarters would yield at least 50 physicians, yet not make the total number of interviewed physicians exceed the budgetarily imposed maximum of about 450 physicians.

The constraints imposed by these desiderata on the selection from the pool of 320 counties proved to be very severe. To begin with, not many medical schools are located in cities sufficiently small to be encompassed here. The contiguity criteria proved even more restrictive; for example, not many counties are near an internship hospital without also being near a medical school. In fact, only a handful of sets of counties was available to fill Categories a, b, d, and e above, and not many were eligible for Categories c and f. The final selection among the few available sets was made according to administrative criteria, primarily access from points where the interviewing agency disposed of well-trained interviewers and supervisors.

The number of counties selected in each category, together with the number of eligible physicians and the number of physicians actually interviewed in each is shown in Table 1. . Compare also Tables 3 and 4 in Chapter IV.

Selection of Individual Physicians

In all but the Medical School County, the sampling design called for interviewing three-quarters of the physicians eligible. Ideally, these three-quarters should be selected at random from among the total number eligible. Past experience convinced us, however, that a return rate of more than three-quarters of whatever number of physicians was approached for interviews was very unlikely. It was therefore decided to approach all eligible physicians in these 14 counties for interviews[1]. in the expectation that the number of successfully completed interviews would exceed three quarters in few places, if any.

While this was the only practical strategy, it attaches some extra importance to the question of sampling bias, since physicians in effect were allowed to "select themselves out" of the sample by refusing or unduly postponing interviews. A comparison of the interviewed physicians with the total of eligible physicians is therefore presented in a later section of this appendix.

[1] i.e., With the exception of Rise county where 21 eligible physicians practicing outside of the limits of its central city were excluded, thus leaving 76 eligible physicians.

In the Medical School County, approximately 330 physicians were eligible. One hundred eighty of them were selected at random in two successive batches. Of the first randomly selected 80, approximately 69%: (55 physicians) were interviewed; the interviewing period came to an end when approximatly 27 of the second randomly selected batch of 100 physicians had been interviewed. The total response rate here is therefore only .46, and the representativeness of this sample is in doubt. Most of the analysis contained in this report does not include the Medical School County.

Response rate

The response rate in the Medical School County was mentioned above. In the remaining fourteen counties, the total response rate was .68, ranging in the several counties from .47 to .84. These rates were computed by dividing the total number of completed interviews by the total number of physicians that were eligible according to the listings of physicians furnished us,, which were based on AMA records. Non-respondents in the computation of these response rates therefore include not only physicians who refused to be interviewed, but also any who were absent or ill during the interviewing period, and any who were found ineligible upon contact, for such reasons as retirement, changes in specialty, or erroneous specialty listing.

In two of the fourteen counties noticeable resistance to the interviews developed as a result of the vocal opposition of certain influential local doctors. Although adaptations and explanations were made, and some of the original opponents later withdrew their objections, response rates in these two counties remained at the low levels of .47 and .51, respectively. The lowest response rate in any other county was .64, and the average response rate on the 12 remaining counties was .73.

Response Bias

Since the listing of "eligible physicians" was based on records drawn from AMA registrations of physicians, which contained information about each physician's type of practice, training, etc., it is possible to report the response rate separately for physicians of varying specialty, year of graduation, and some other characteristics.

The response rate of internists was somewhat higher than that of general practitioners (74% vs. 67%), and the more recent graduates yielded a higher response rate than their older colleagues, especially than those graduated before 1935 (Table 2). In view of what was learned in the body of the report, both of these differences mean that our sample is somewhat biased toward the physicians who are better informed of recent developments in medicine.

It is also possible to report response rates separately for physicians who received varying numbers of sociometric nominations, since the nominations made were recorded whether they went to interviewed physicians or not. A considerable difference is observed: 81% of those who were named as advisors (Q. 11) by at least one colleague allowed themselves to be interviewed; the same was true for 76% of those who were named as discussion partners (Q. 70) but not as advisors, and for only 59% of those who were not nominated at all. This is by no means merely a consequence of the disproportionate number of specialists among the sociometric nominees, Table 3 shows. As a matter of fact, although internists who were named as advisors had the highest response rate of any group (88%), internists who were not named as advisors had a lower response rate than their general-practice counterparts. Perhaps physicians who, in spite of their specialty standing, are not selected as advisors are isolated in a special way.

In order to judge the combined effect of year of graduation, specialization, and being named as an advisor or discussion partner on interview response, a special index of age and specialization was constructed, combining recency of graduation, specialty practice, and board certification. (Unlike the age-specialization typology used in the body of the report, this special index could not take account of years of residency, since no such data were available for the physicians not interviewed.) Table 4 shows that even within categories of this combined index higher response rates were yielded by advisors than by those were only named as discussion partners, and higher rates by the latter than by those not named at all.

It is clear from these figures that there is a bias in the selection of the actually achieved sample. The bias is not large, and since the achieved sample constitutes such a large portion of the eligible physicians (68% outside of the Medical School County), it is not likely seriously to affect the findings obtained. Nevertheless the nature of the bias is germaine to the subject under analysis in two ways.

On the one hand, our sample somewhat over-represents the very categories of physicians whose up-to-date information level and keeping-up behavior are highest. On the other hand, it over-represents those physicians who are more centrally located in the colleague-to-colleague network, especially as dispensers or relayers of information. A more truly representative sample would, on the average, have achieved lower information scores, and been somewhat less centrally enmeshed in the communication network, than our sample did. Since our report is interested in the relationship between these and other phenomena, rather than in claiming to present an accurate descriptive picture of the distribution of either, the consequences on the evidence of this report are probably not serious.

The differential response rates have, however, some substantive interest in their own right. It would seem that participation in our interviews was, to a gratifying extent, defined as a professional activity, so that it is the physicians who are least drawn into relations with their colleagues who were least likely to participate in this as they are in other activities of the profession. To some extent, our data-gathering effort encountered difficulties in the same quarters as continuing-education programs so often do.

Table C-1

Number of physicians eligible and interviewed in each county

Type of County	Code name of county (1)	Number Interviewed (2)	Number approached (3)	Number eligible but not approached (4)	Response rate $100\frac{(1)}{(2)}$
b. Internship hospital, near medical school	Pro	32	46	--	75%
c. Internship hospital, not near a med. sch.	Mine	51	77	--	66%
	Rise	57	76	21	75%
d. Near medical school	Xim	19	37	--	51%
	Ate	19	30	--	64%
e. Near internship hosp.	Olde	19	26	--	73%
	Shafts	19	23	--	83%
	Stone	27	58	--	47%
	West	15	18	--	83%
	Hern	16	19	--	84%
f. Not near an internship hospital	View	18	27	--	67%
	Wood	17	24	--	71%
	Fisher	8	10	--	80%
	Hunts	14	17	--	82%
Total without Medical-School County		331	488	21	68%
a. Medical School County		82	180[a]	ca. 250	46%
All counties combined		413	668	271	62%

[a] Not all 180 were actually approached. See p. C - 8

Table C - 2

Response Rate, by year of Graduation

Year of Graduation from Medical School	Response Rate	Number approached
1960 or later	73%	32
1955-59	78%	73
1950-54	71%	58
1945-49	75%	51
1940-44	71%	76
1935-39	70%	56
1930-34	59%	51
1925-29	61%	36
1924 or earlier	47%	55
Total		488

Table C - 3

Response Rate, by Specialty and Nominations Received

(Number approached in parentheses)

	General practitioners	Internists	Total
Named as:-			
Advisor	70% (33)	88% (56)	81% (89)
Discussion Partner only	79% (128)	45% (11)	76% (139)
Neither	60% (249)	36% (11)	59% (260)
All combined	67% (410)	74% (78)	

Table ;C - 4

Response Rate, by Age, Specialization, and Nominations Received

(Number approached in parentheses)

	Special index of age and specialization		
	High	Medium	Low
Nominated as:-			
Advisor	84% (37)	83% (23)	76% (29)
Discussion Partner only	-- (4)	86% (57)	71% (78)
Neither	--	64% (83)	56% (177)